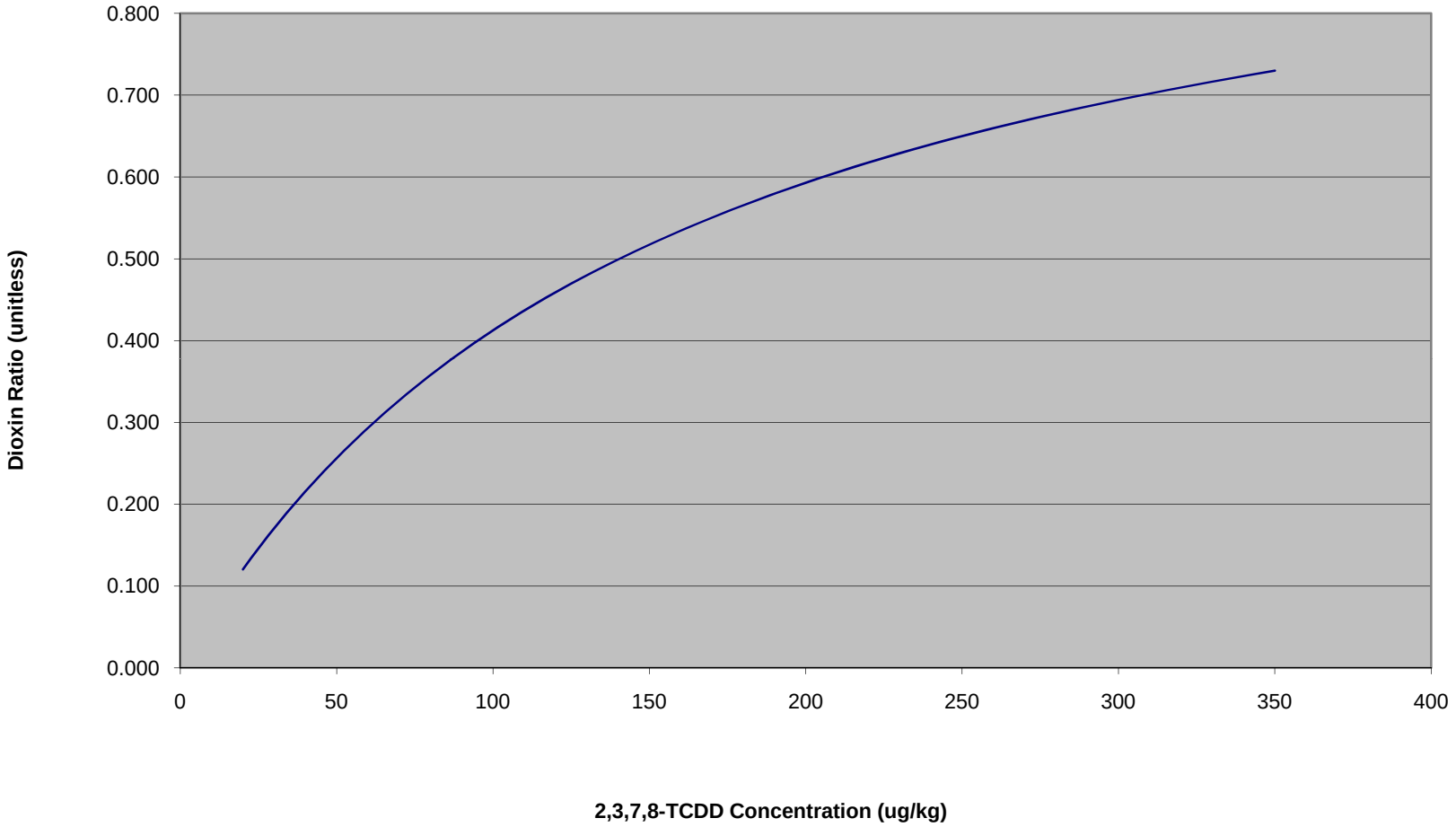
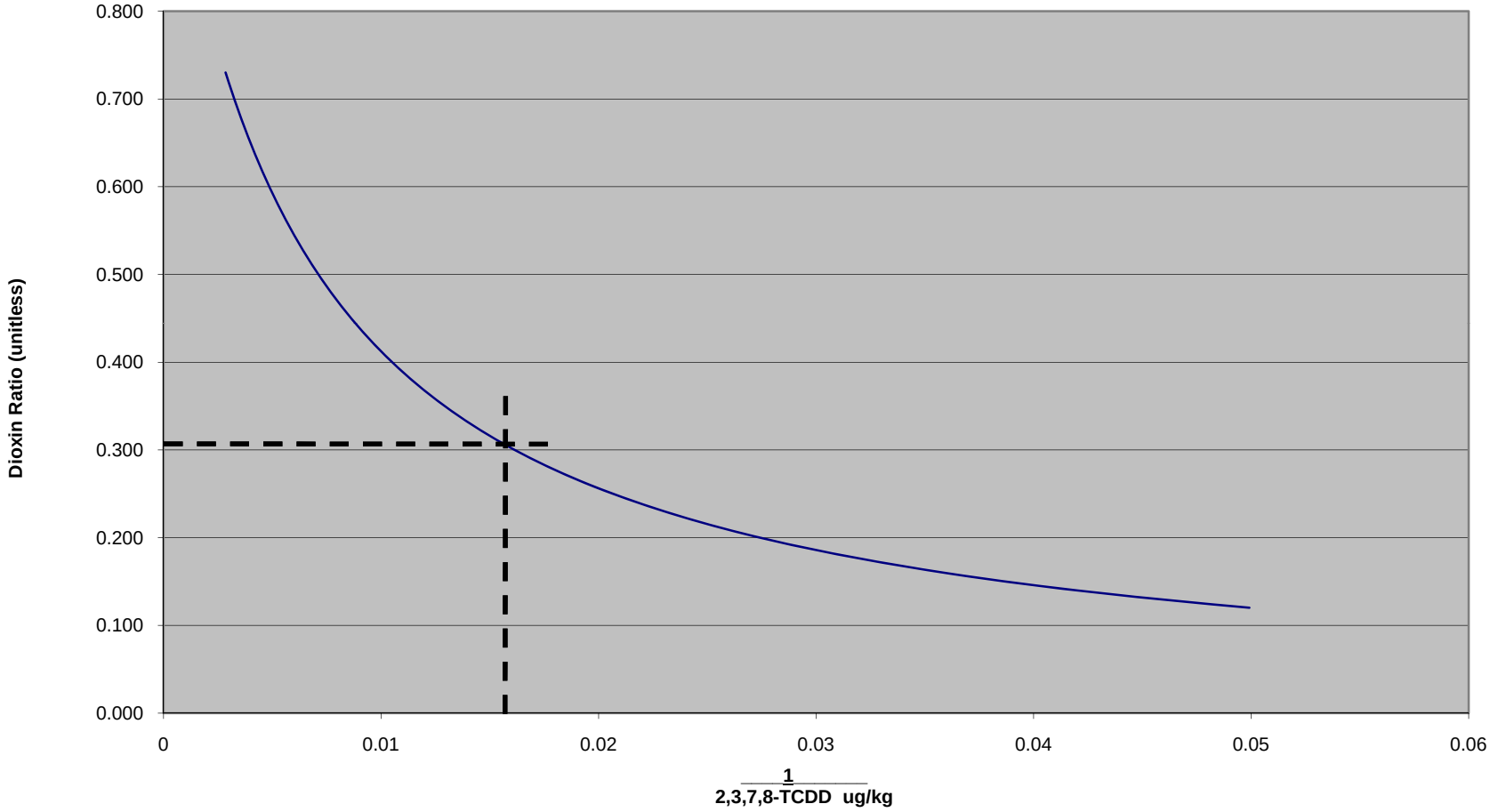


Example Two-End-Member Mixing Curve

Lower Passaic River Restoration Project

Figure 6-12

September 2008



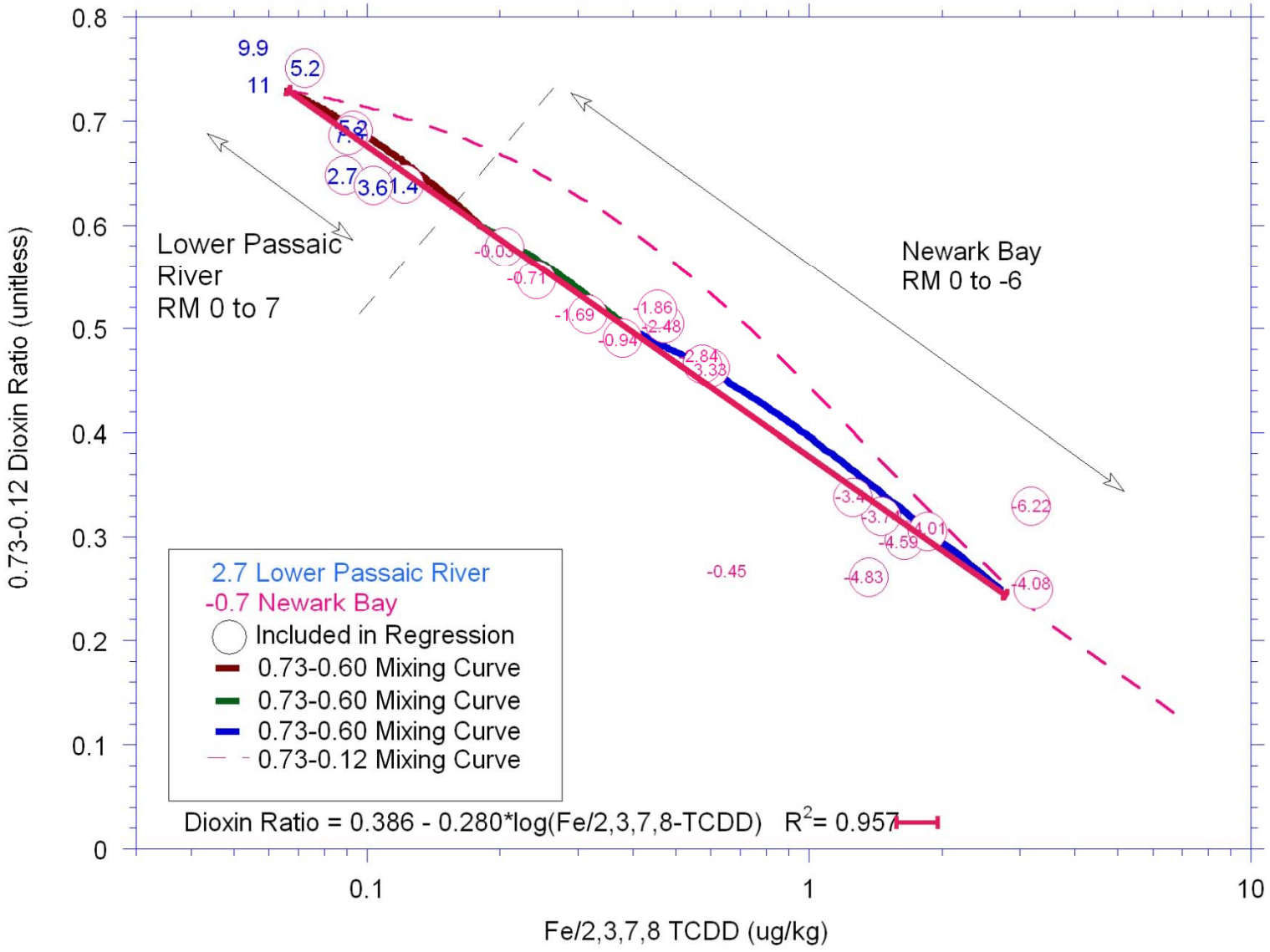
US Army Corps of Engineers

Example Mixing Curve With Reciprocal Concentration

Lower Passaic River Restoration Project

Figure 6-13

September 2008

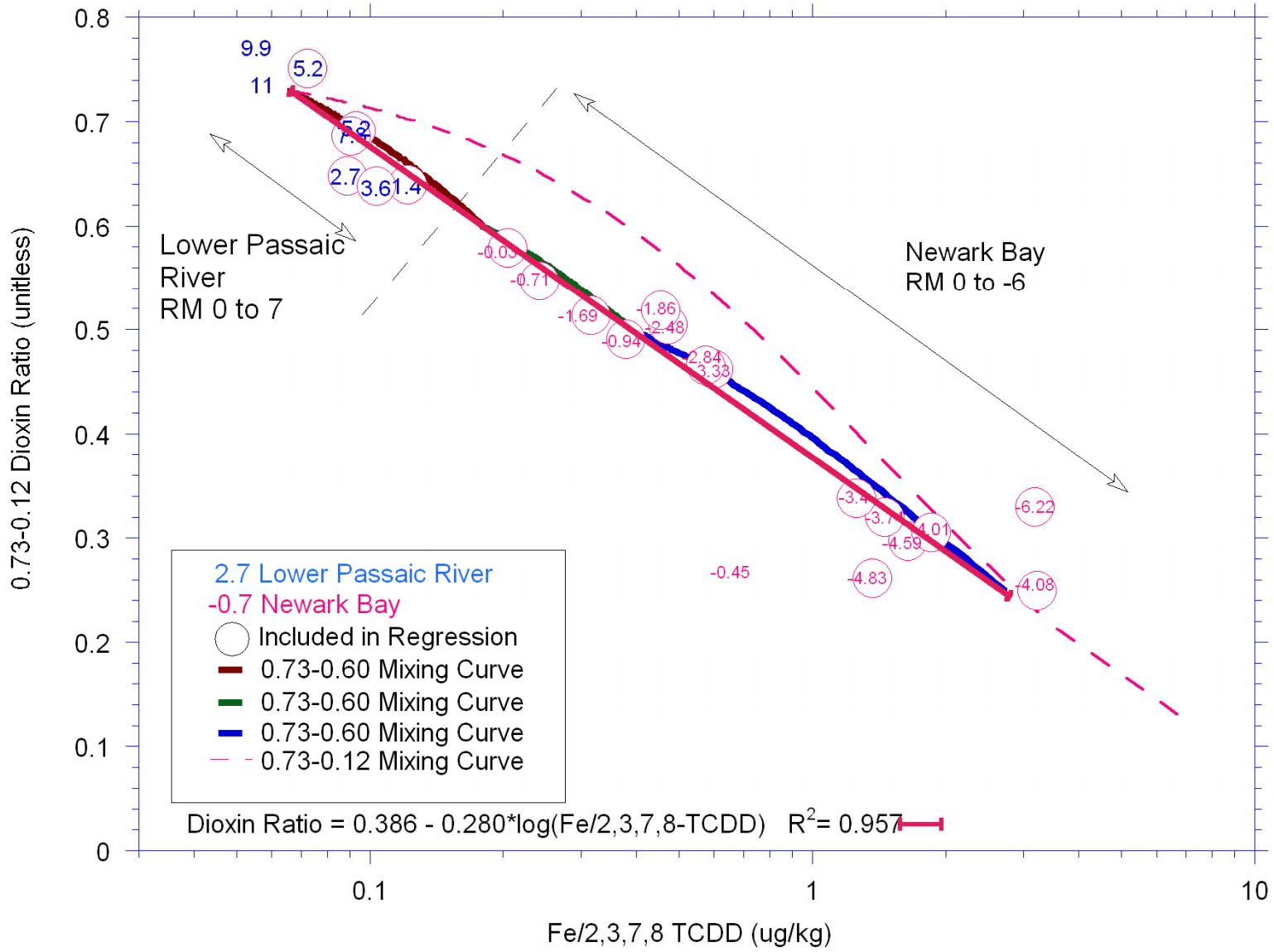


Dioxin Results and Two-End-Member Mixing Curve for the Lower Passaic River

Lower Passaic River Restoration Project

Figure 6-14

September 2008

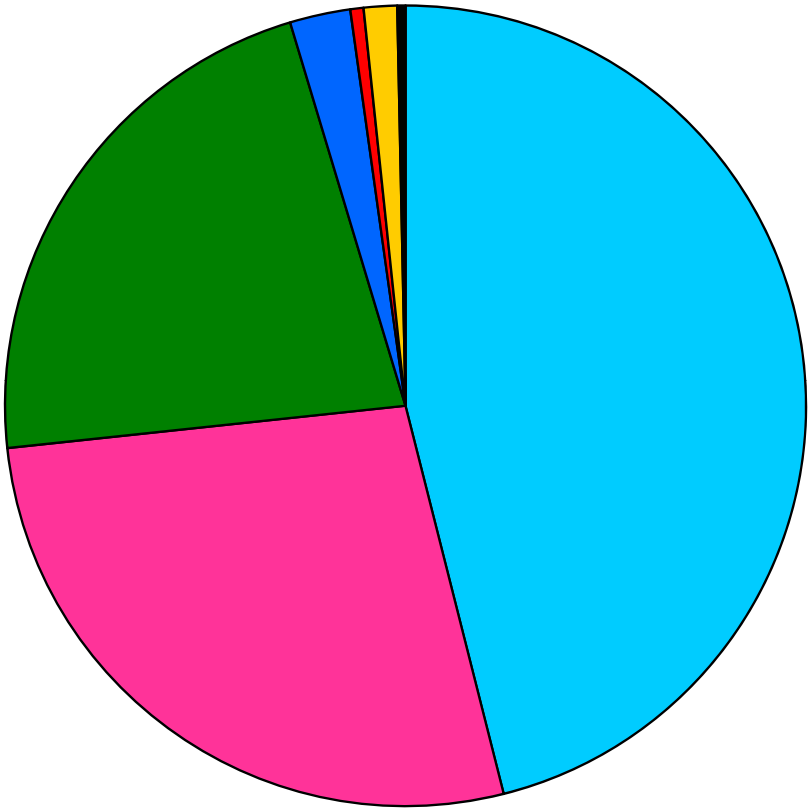


Dioxin Results and Multiple Mixing Curves for the Lower Passaic River and Newark Bay

Lower Passaic River Restoration Project

Figure 6-15

September 2008



Legend

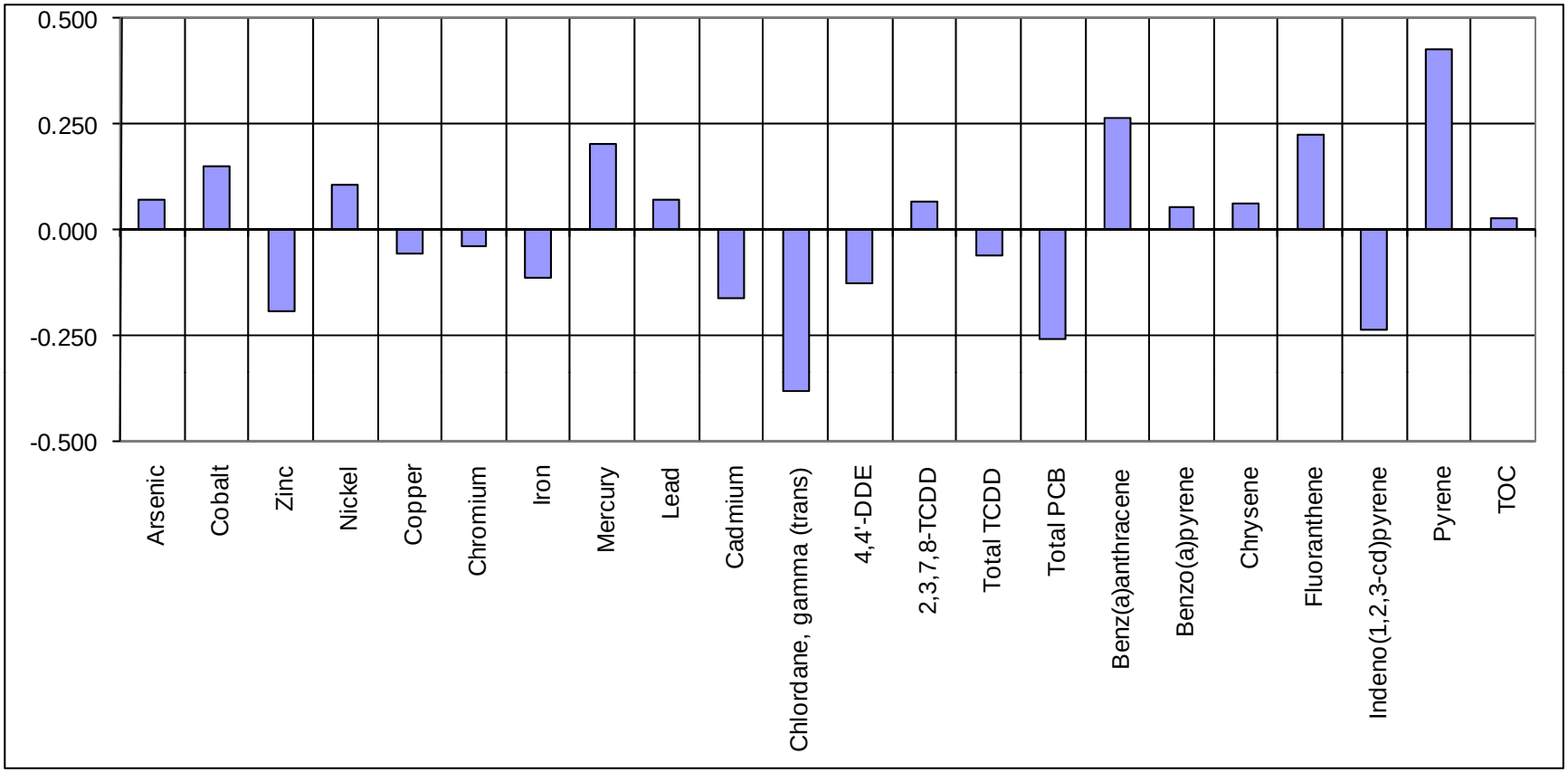
- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

Solid Contribution to the Lower Passaic River for Non Iron-Normalized Scenario

Lower Passaic River Restoration Project

Figure 19-1

September 2008

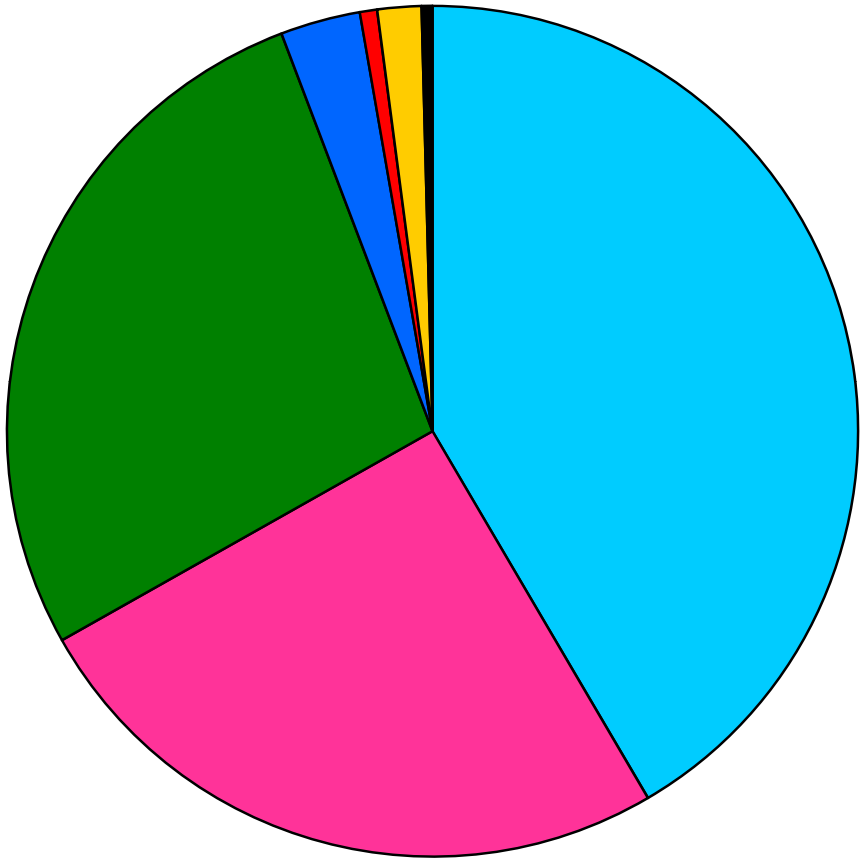


Percent fit to the Lower Passaic River for Non Iron-Normalized Scenario

Lower Passaic River Restoration Project

Figure 19-2

September 2008



Legend

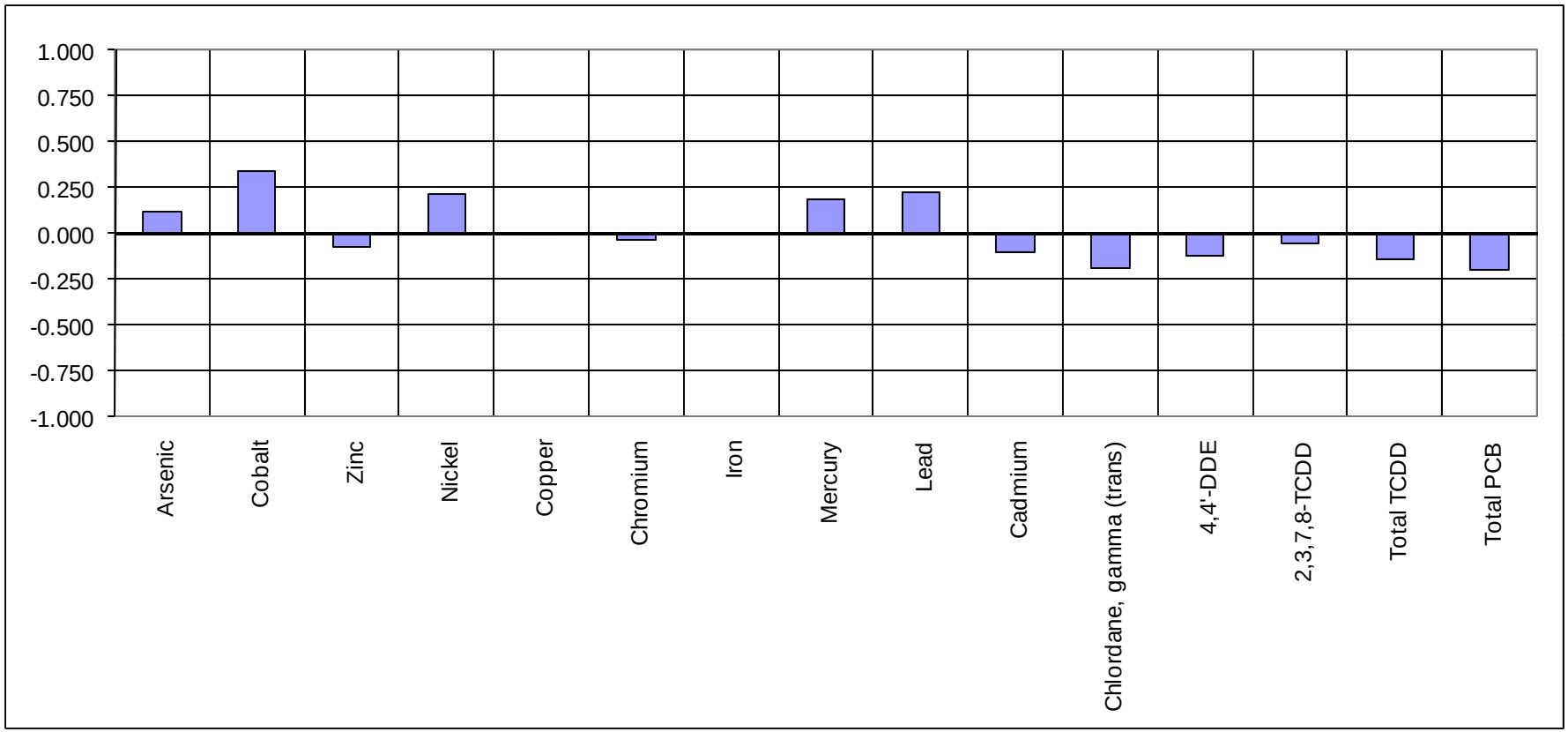
- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

Solid Contribution to the Lower Passaic River for Iron-Normalized

Lower Passaic River Restoration Project

Figure 19-3

September 2008

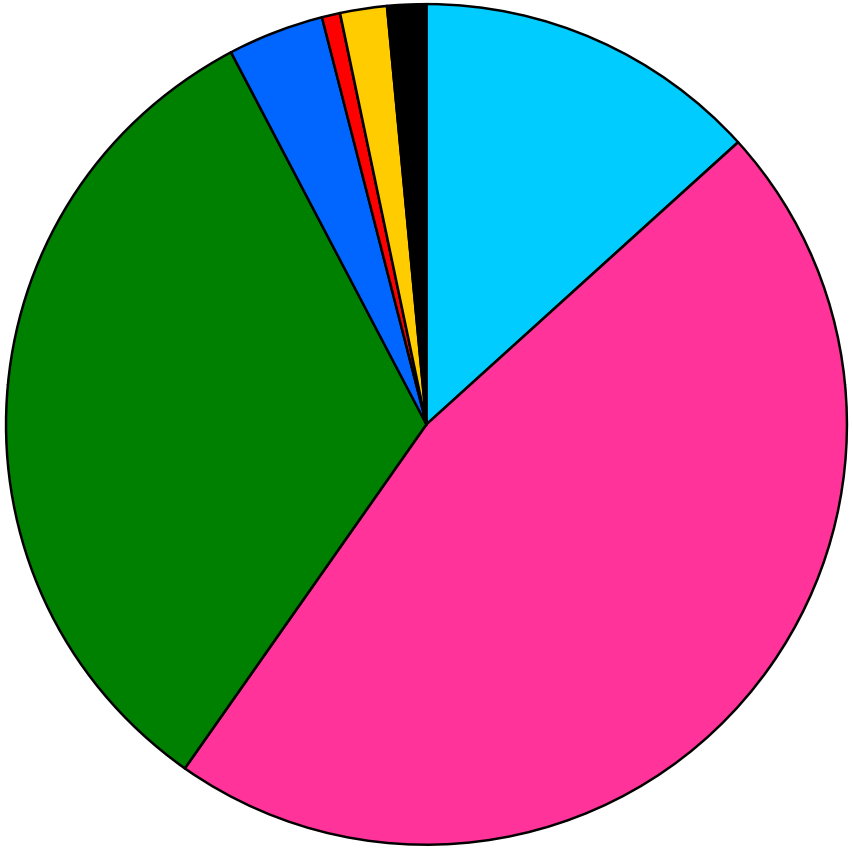


Percent fit to the Lower Passaic River for Iron-Normalized Scenario

Lower Passaic River Restoration Project

Figure 19-4

September 2008



Legend

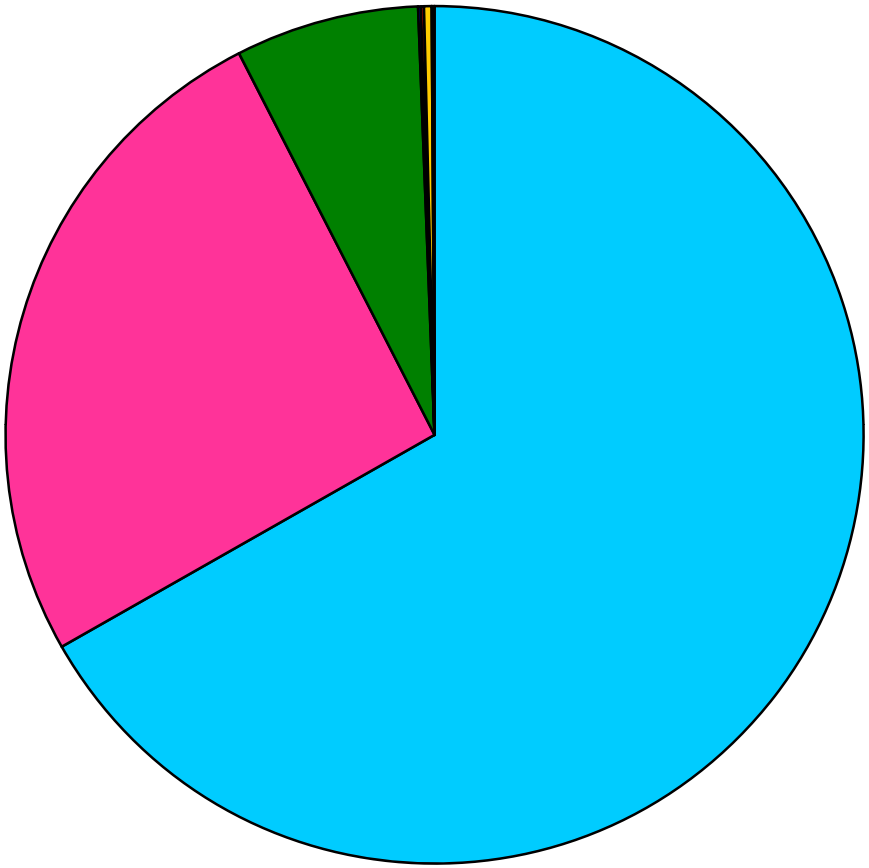
- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

Solid Contribution to the Lower Passaic River for the Length-Weighted Average Scenario

Lower Passaic River Restoration Project

Figure 19-5

September 2008



Legend

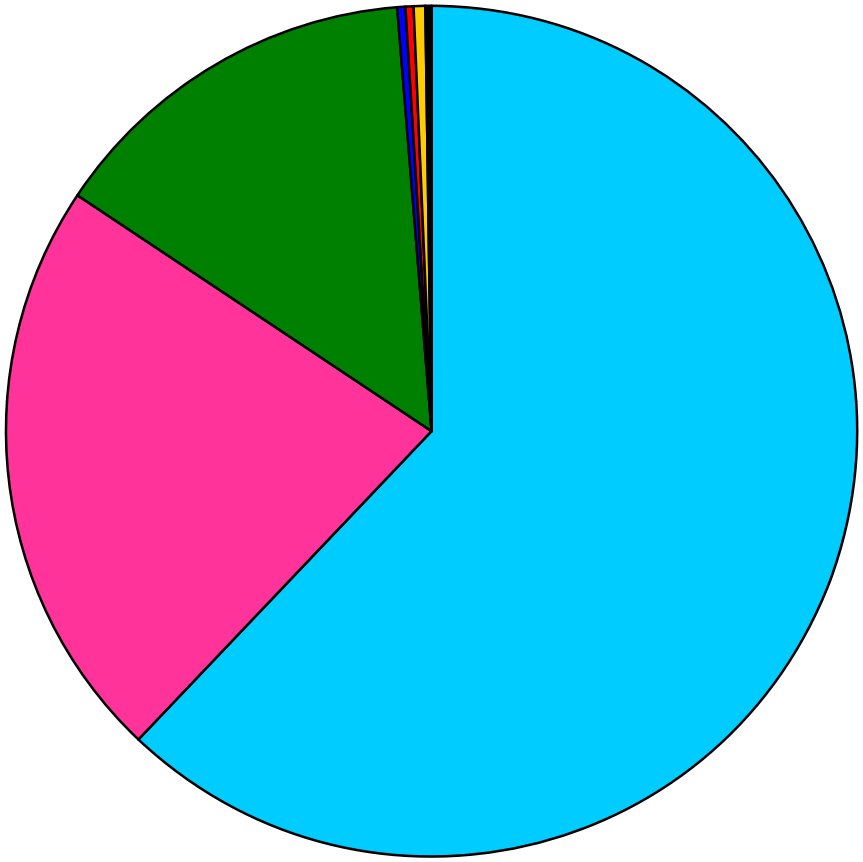
- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

Mercury Contribution to the Lower Passaic River for Non Iron-normalized Scenario

Lower Passaic River Restoration Project

Figure 19-6

September 2008



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

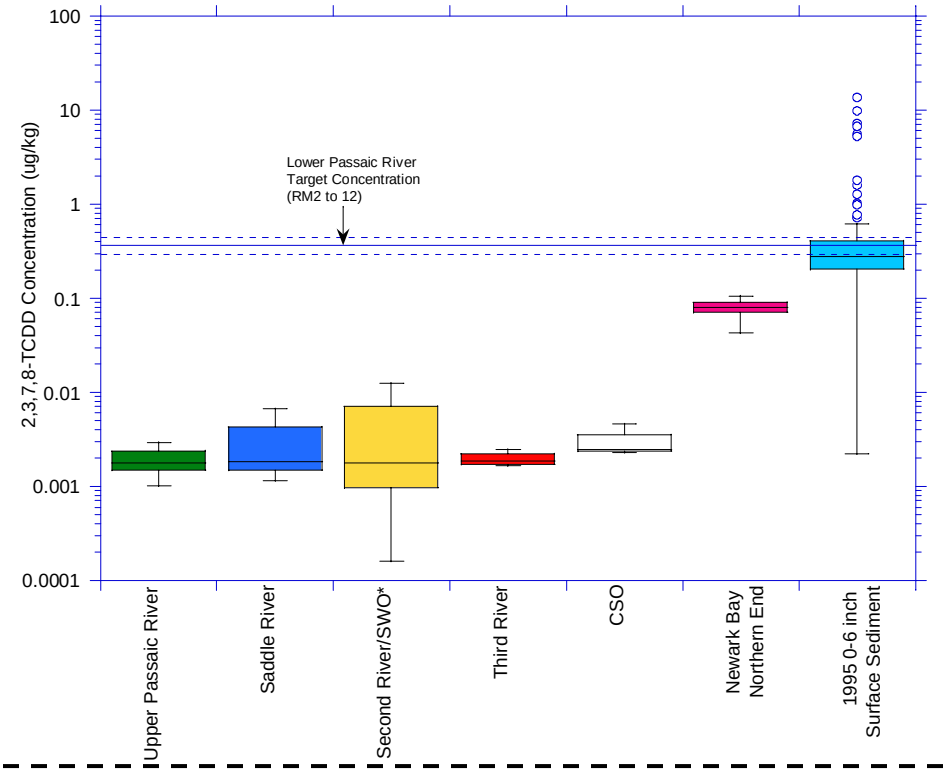
Mercury Contribution to the Lower Passaic River for Iron-normalized Scenario

Lower Passaic River Restoration Project

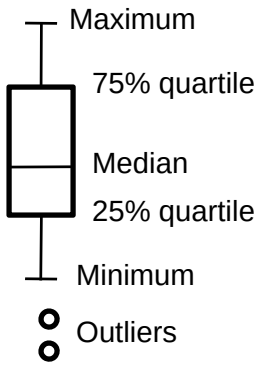
Figure 19-7

September 2008

Source Concentration of 2,3,7,8-TCDD



Legend

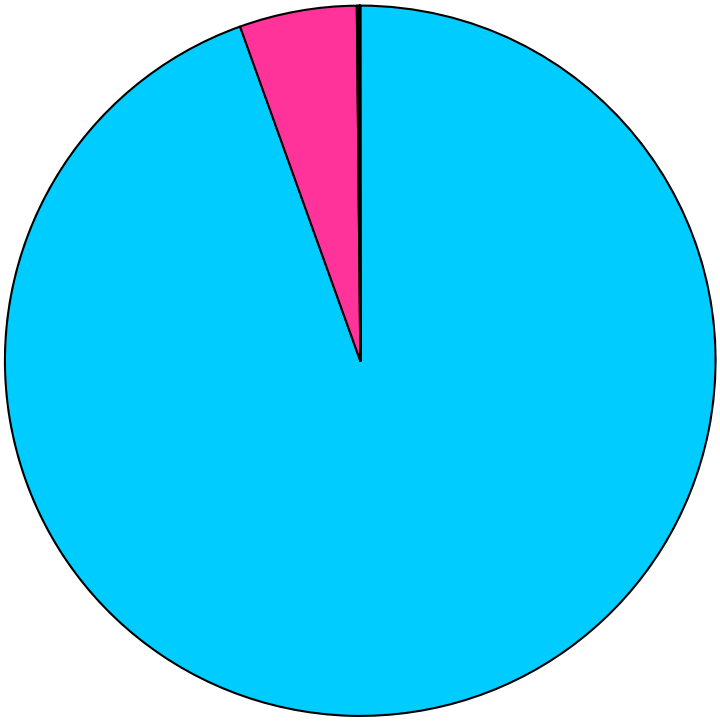


Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for 2,3,7,8-TCDD



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

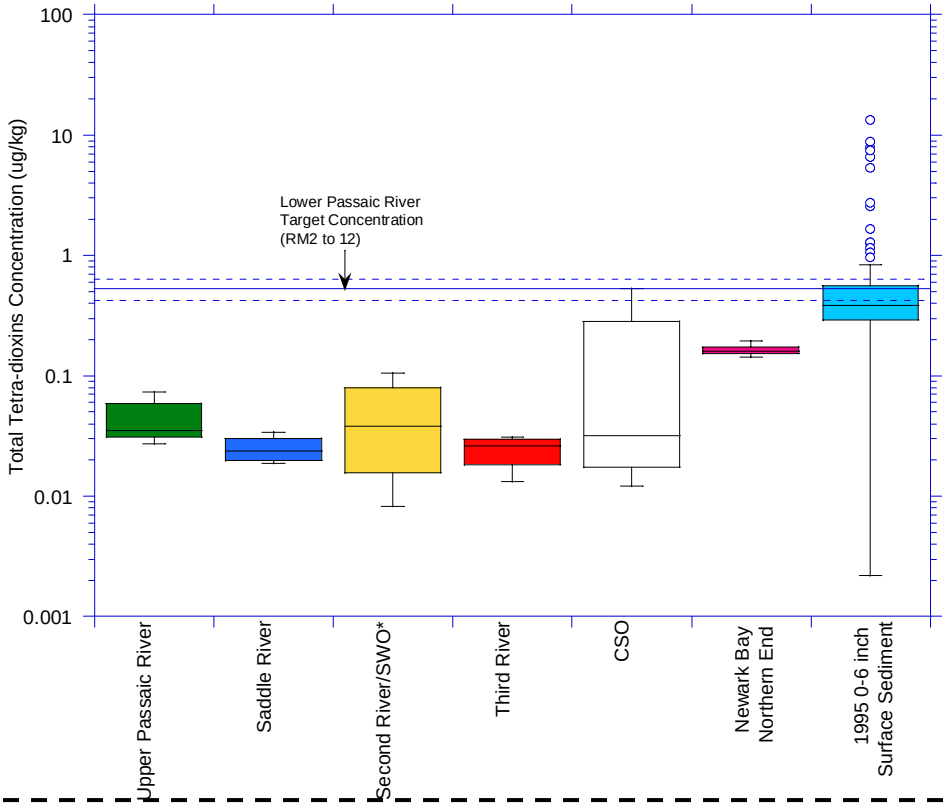
Source Concentration and Mass Balance for 2,3,7,8-TCDD

Lower Passaic River Restoration Project

Figure 19-8

September 2008

Source Concentration of Total Tetra-dioxins



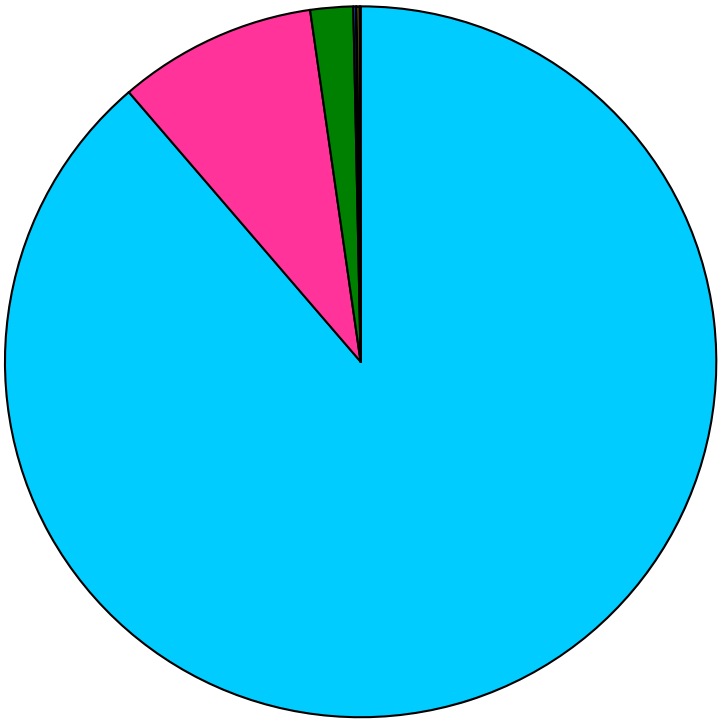
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Total Tetra-dioxins



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

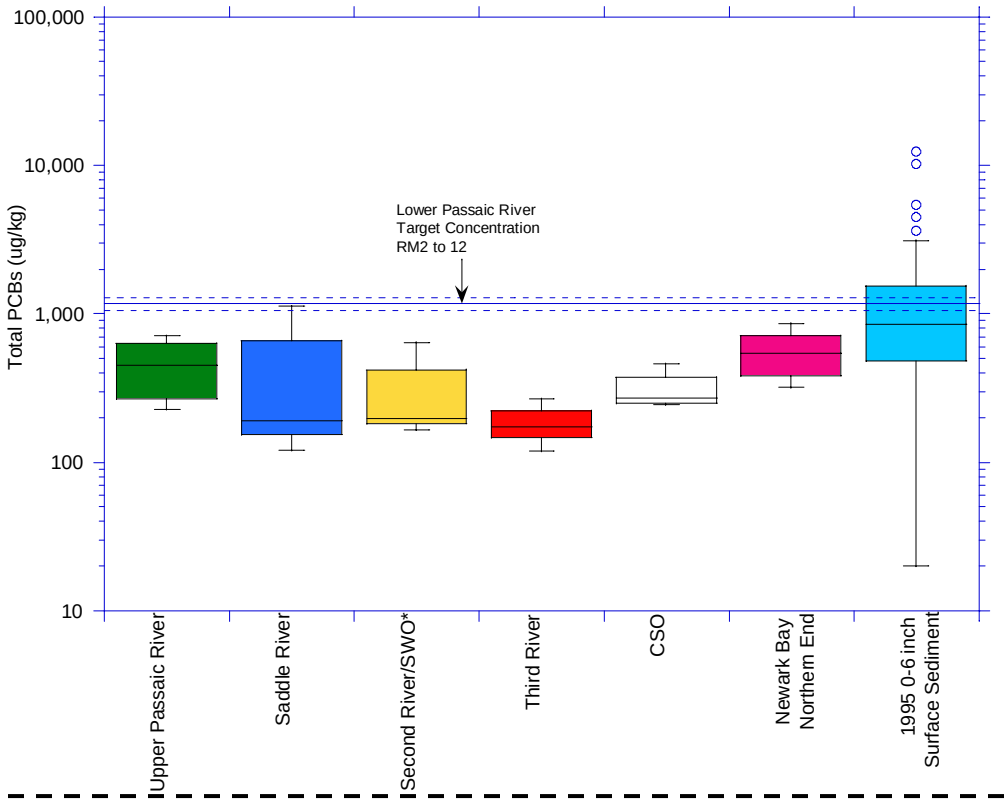
Source Concentration and Mass Balance for Total Tetra-dioxins

Lower Passaic River Restoration Project

Figure 19-9

September 2008

Source Concentration of Total PCBs



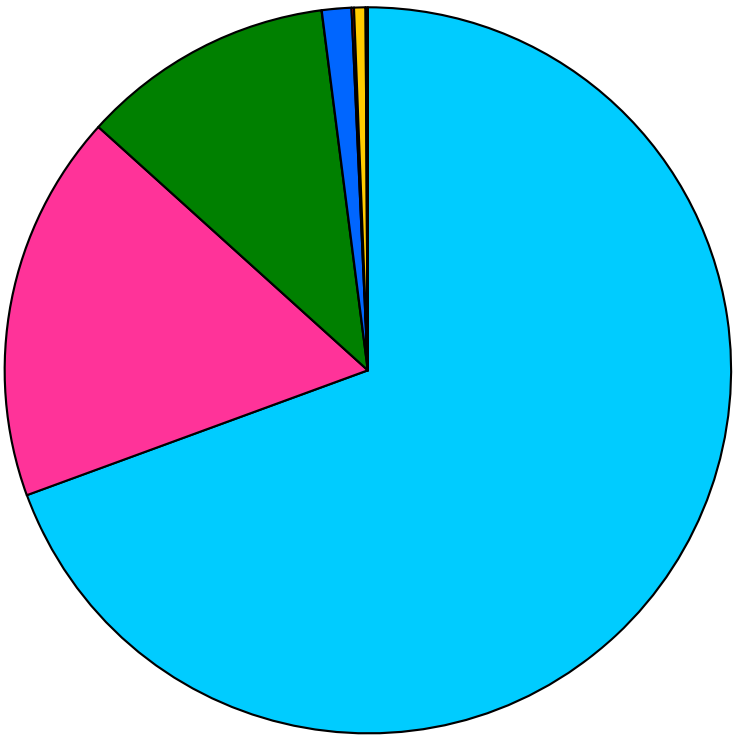
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Total PCBs



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

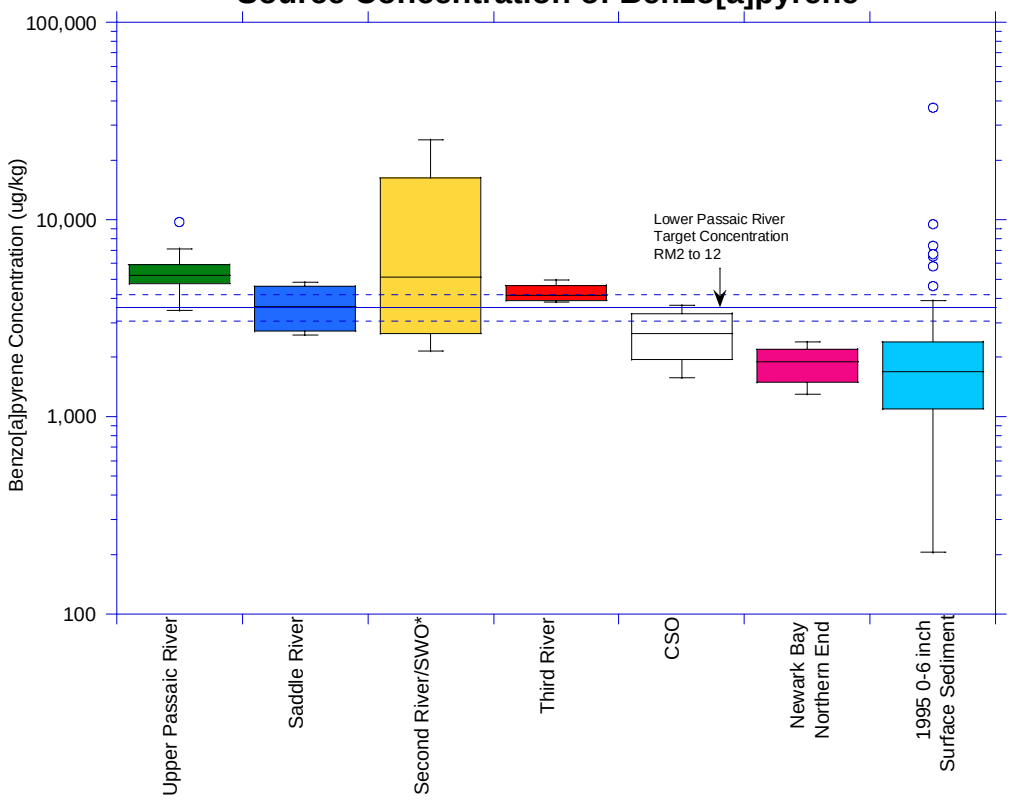
Source Concentration and Mass Balance for Total PCBs

Lower Passaic River Restoration Project

Figure 19-10

September 2008

Source Concentration of Benzo[a]pyrene



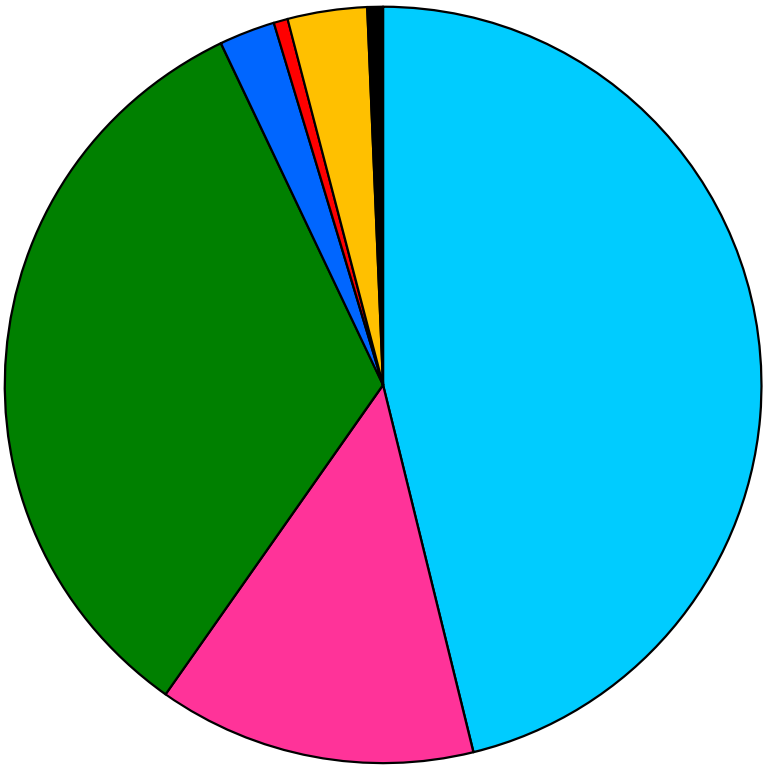
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Benzo[a]pyrene



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

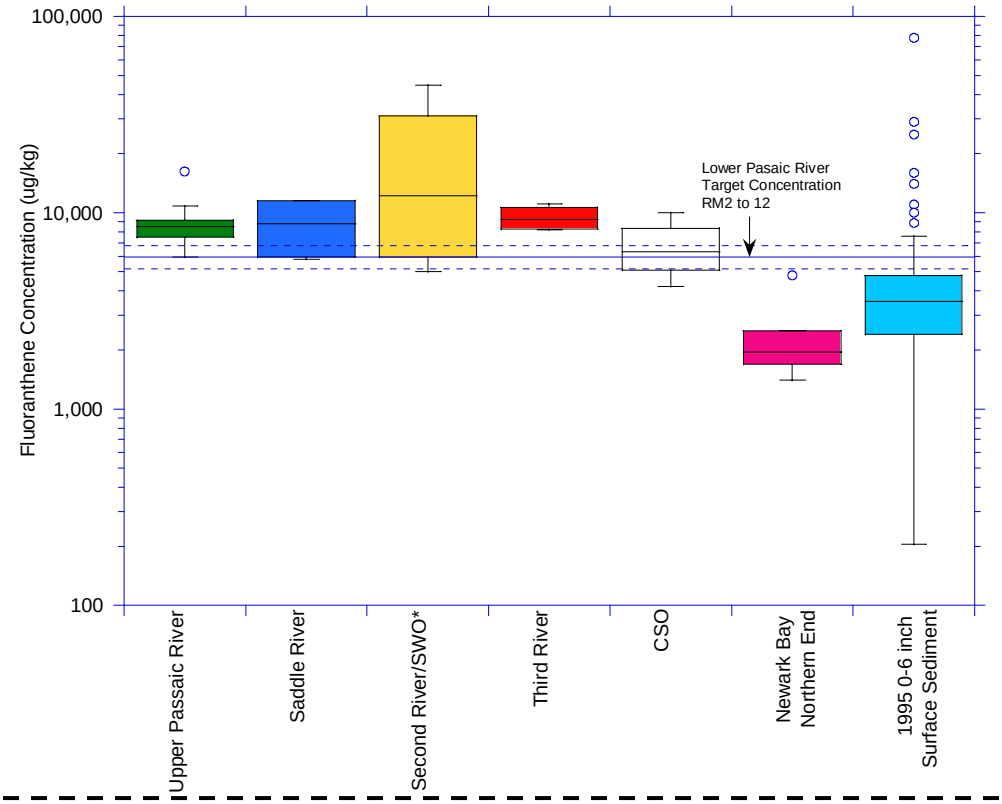
Source Concentration and Mass Balance for Benzo[a]pyrene

Lower Passaic River Restoration Project

Figure 19-11

September 2008

Source Concentration of Fluoranthene



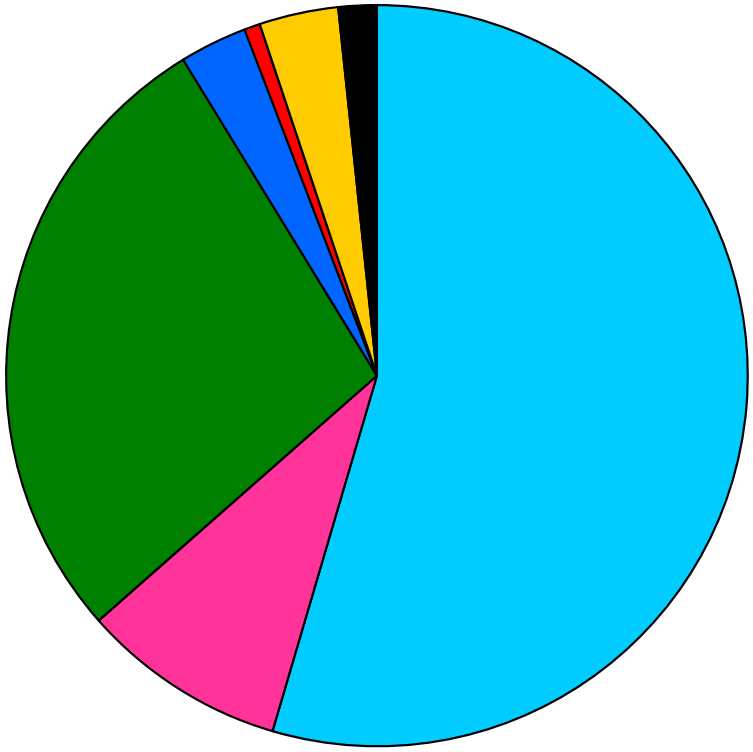
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Fluoranthene



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

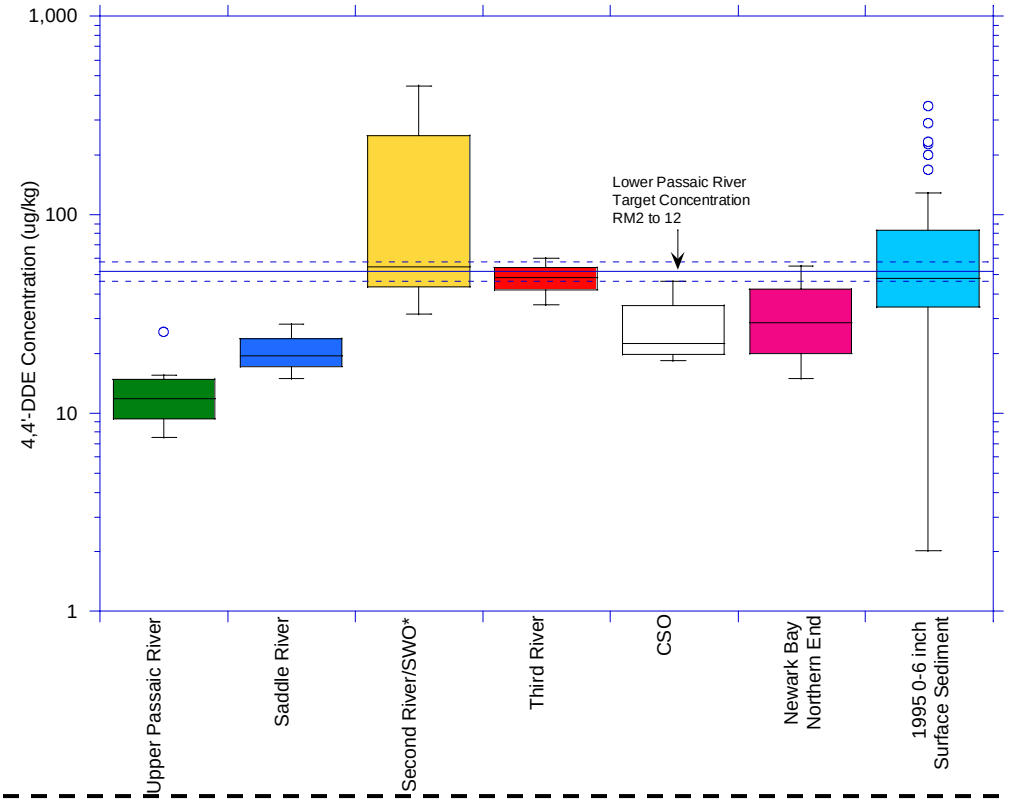
Source Concentration and Mass Balance for Fluoranthene

Lower Passaic River Restoration Project

Figure 19-12

September 2008

Source Concentration of 4,4'-DDE



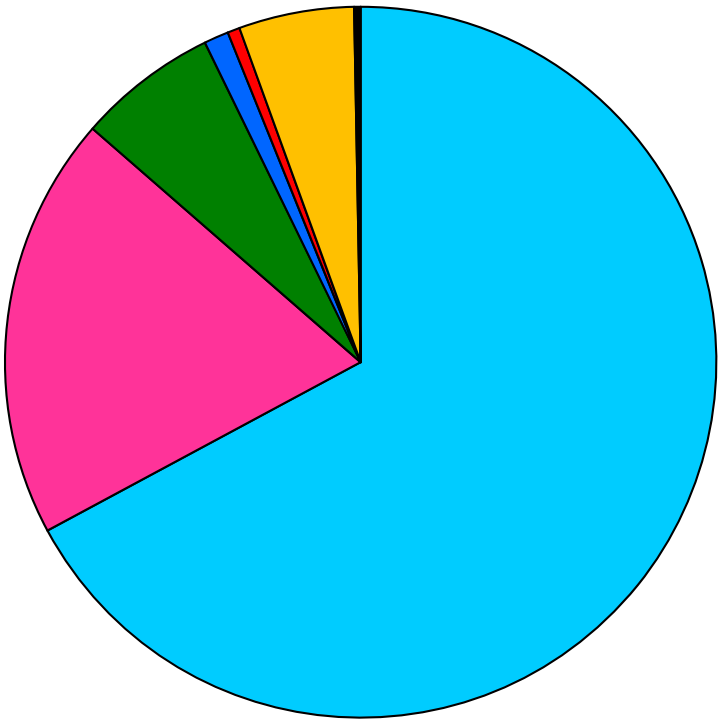
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for 4,4'-DDE



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

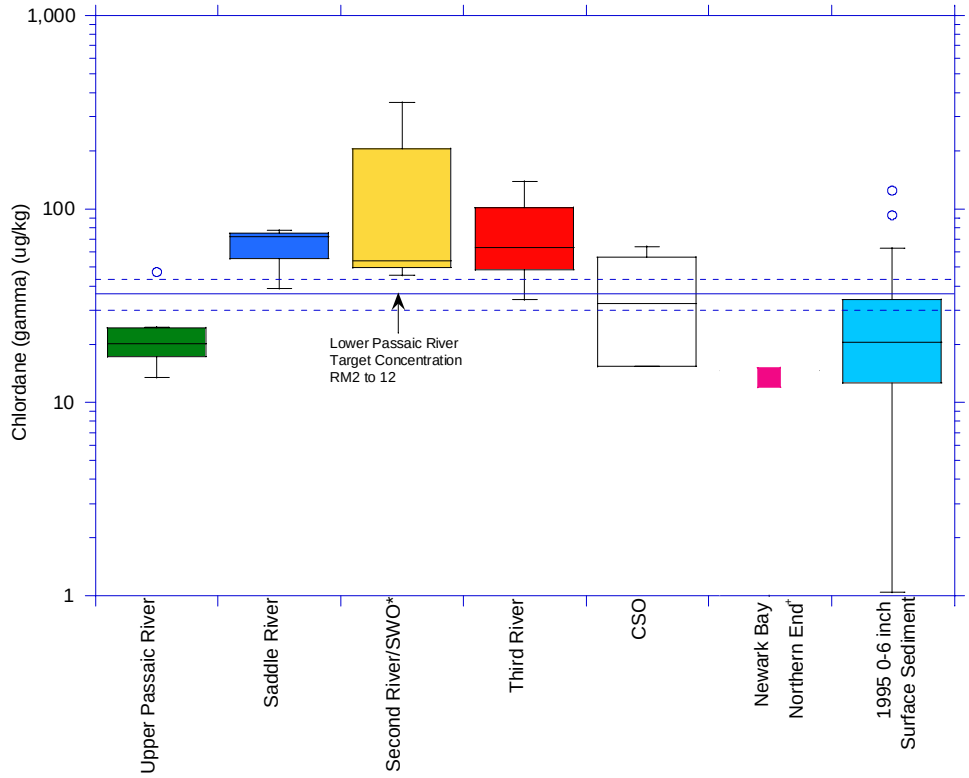
Source Concentration and Mass Balance for 4,4'-DDE

Lower Passaic River Restoration Project

Figure 19-13

September 2008

Source Concentration of Chlordane (gamma, trans)



Legend

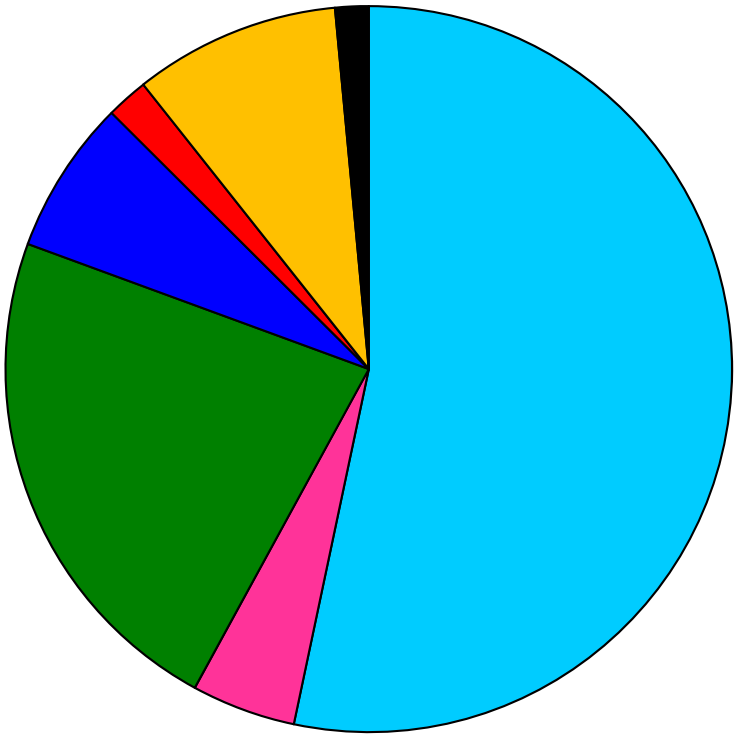
- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

+Robinson (2002)

Mass Balance for Chlordane (gamma)



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

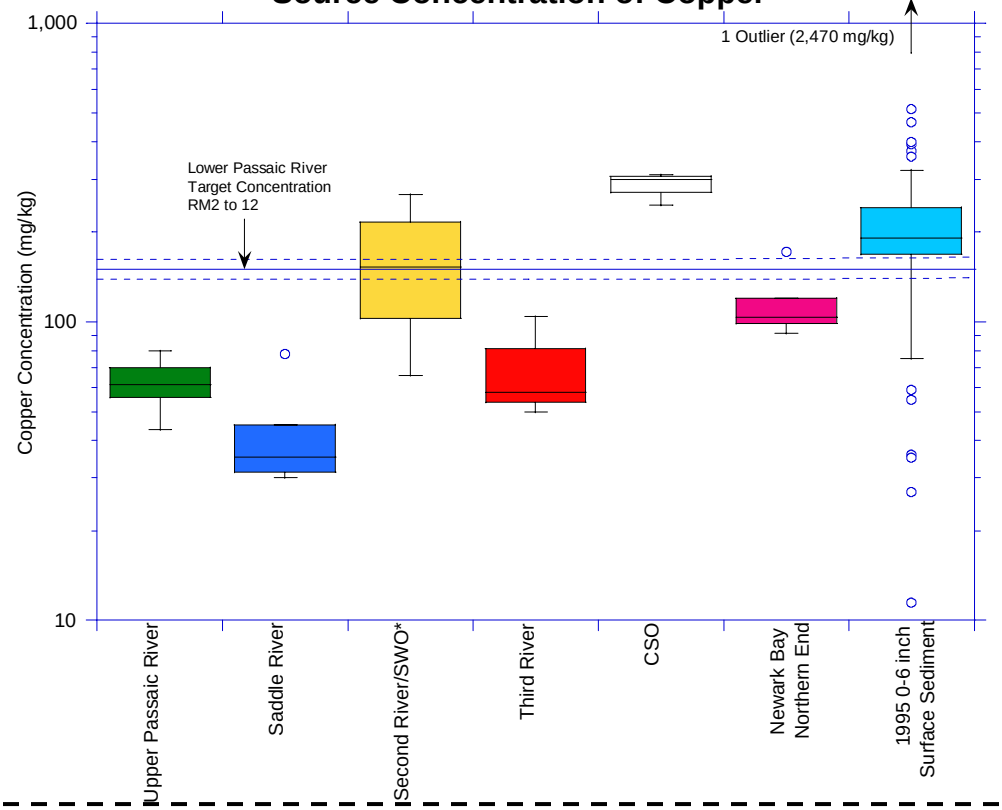
Source Concentration and Mass Balance for Chlordane (gamma)

Lower Passaic River Restoration Project

Figure 19-14

September 2008

Source Concentration of Copper



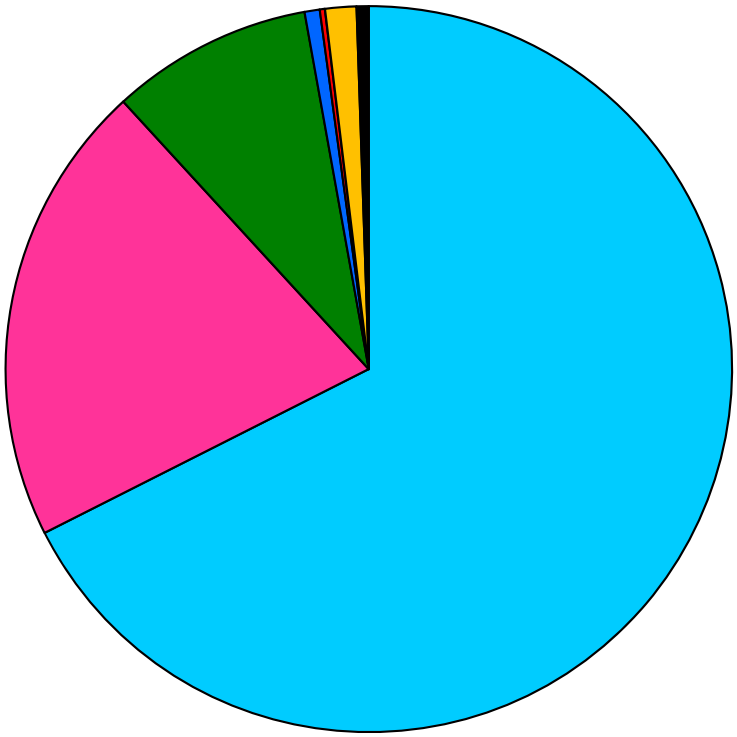
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Copper



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

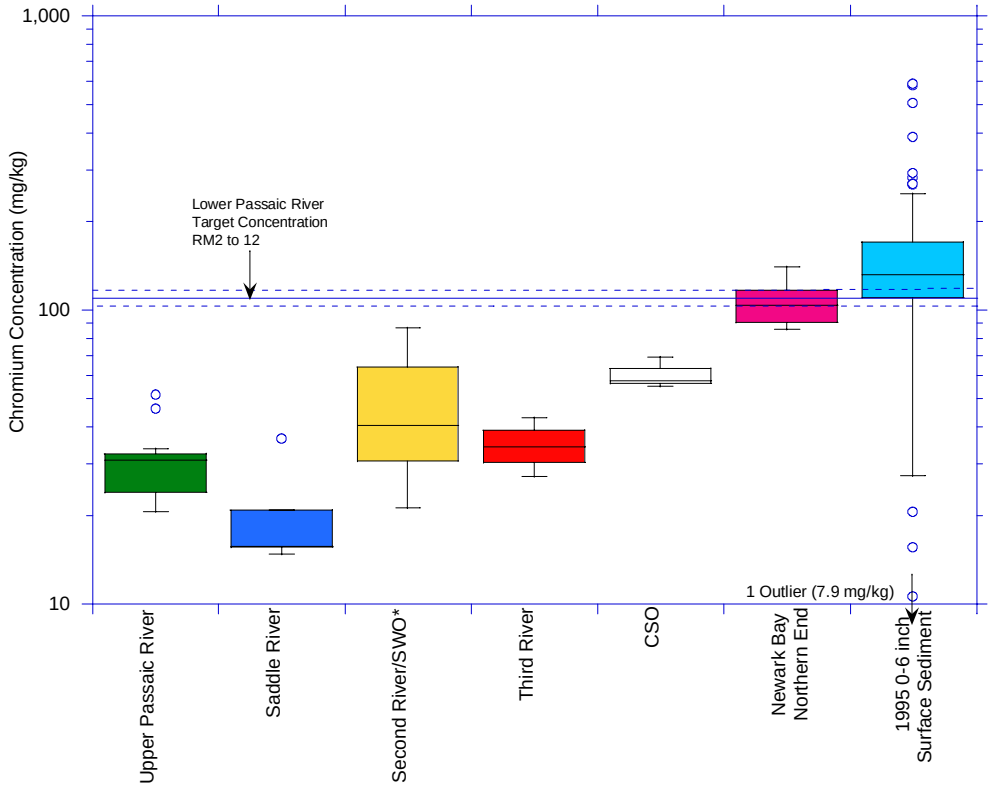
Source Concentration and Mass Balance for Copper

Lower Passaic River Restoration Project

Figure 19-15

September 2008

Source Concentration of Chromium



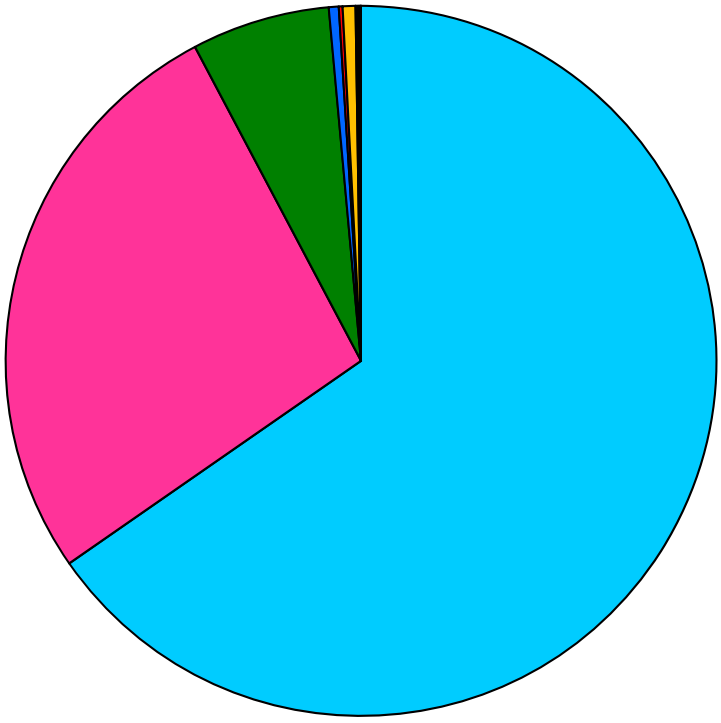
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Chromium



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

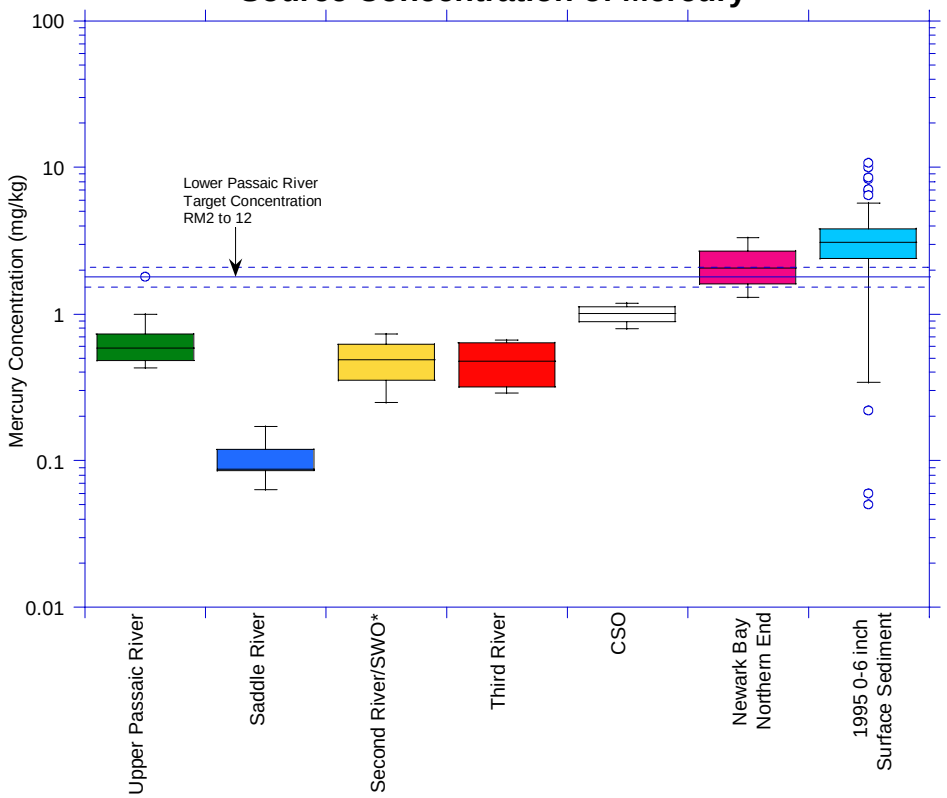
Source Concentration and Mass Balance for Chromium

Lower Passaic River Restoration Project

Figure 19-16

September 2008

Source Concentration of Mercury



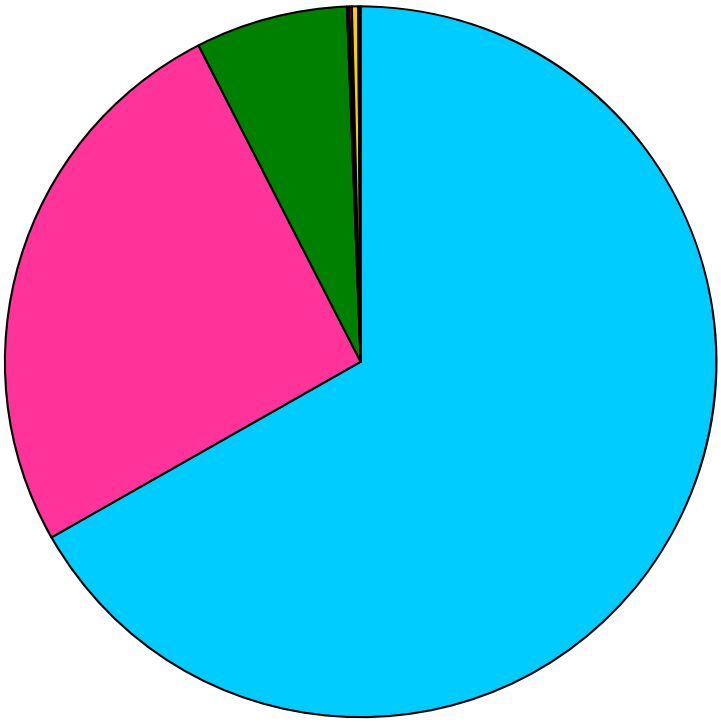
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Mercury



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

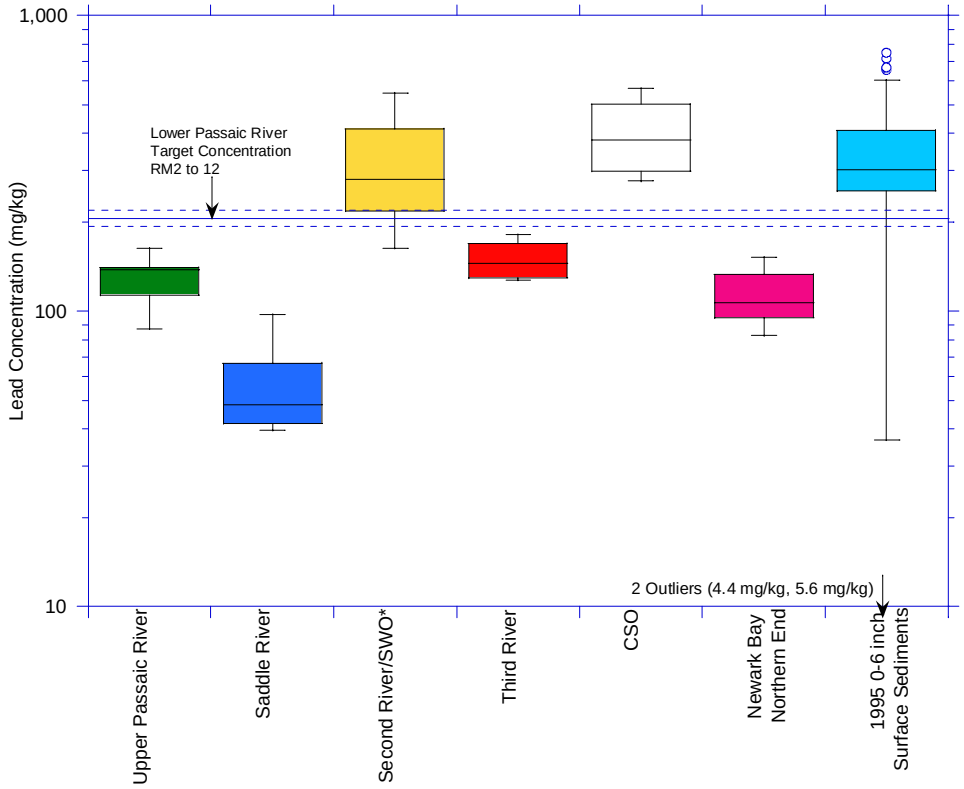
Source Concentration and Mass Balance for Mercury

Lower Passaic River Restoration Project

Figure 19-17

September 2008

Source Concentration of Lead



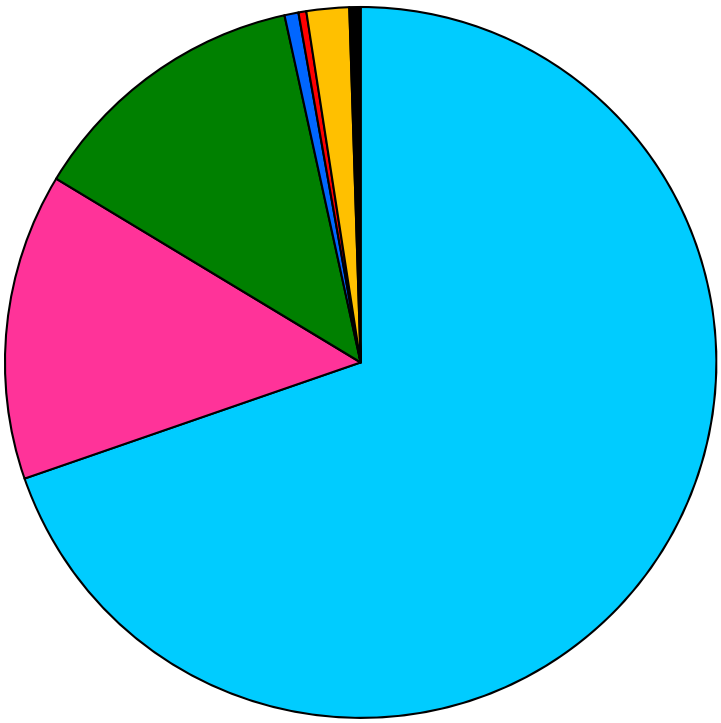
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Lead



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

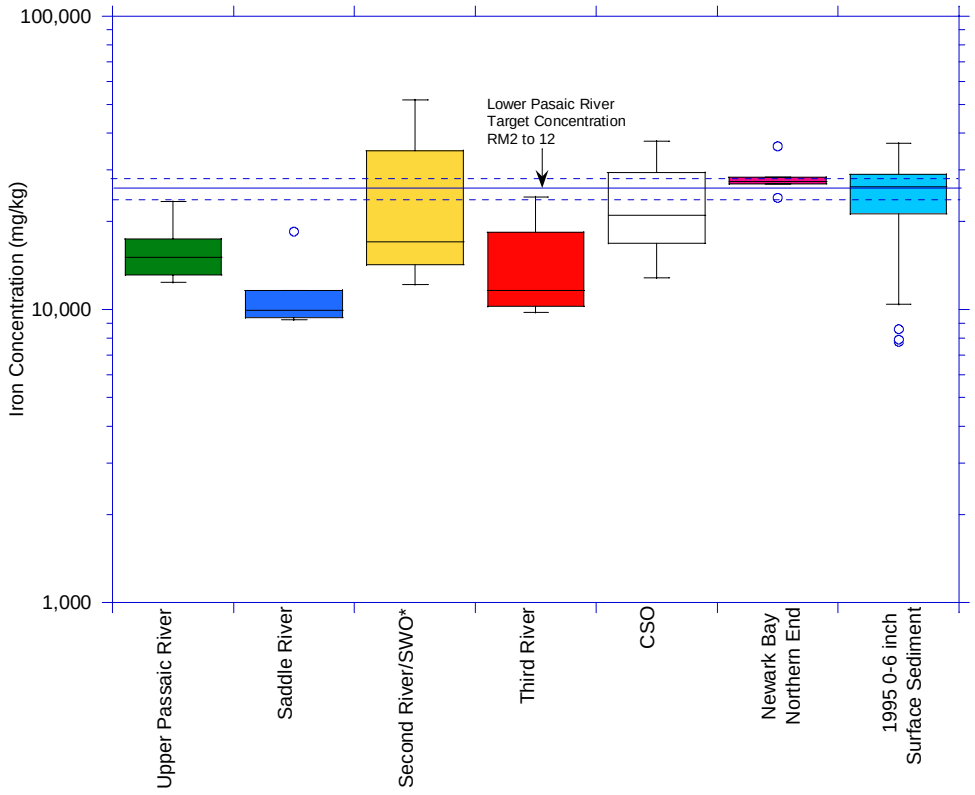
Source Concentration and Mass Balance for Lead

Lower Passaic River Restoration Project

Figure 19-18

September 2008

Source Concentration of Iron



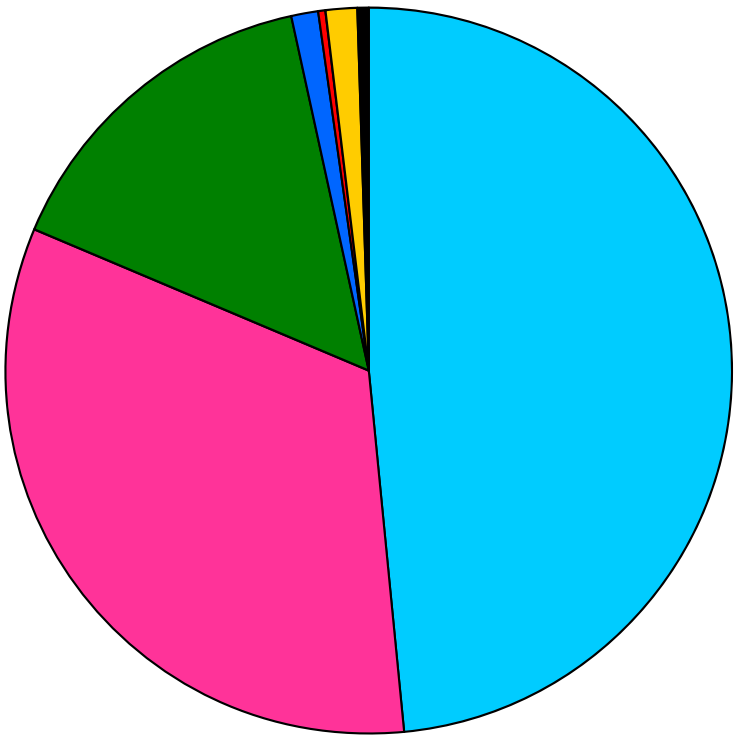
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Iron



Legend

- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

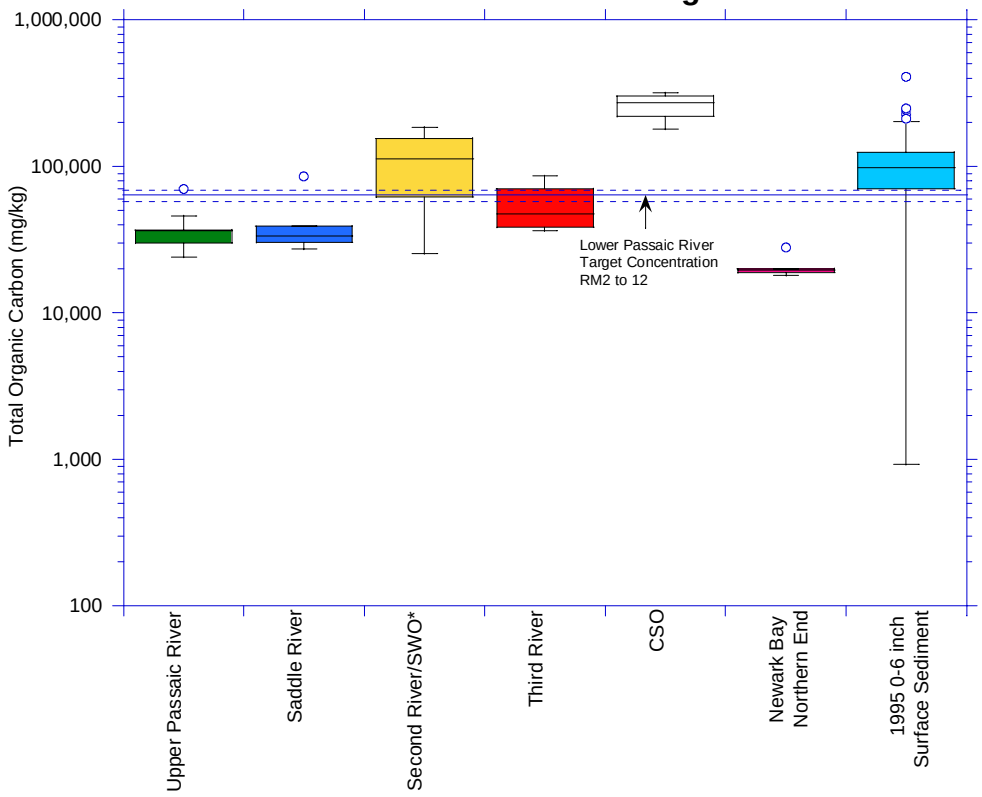
Source Concentration and Mass Balance for Iron

Lower Passaic River Restoration Project

Figure 19-19

September 2008

Source Concentration of Total Organic Carbon



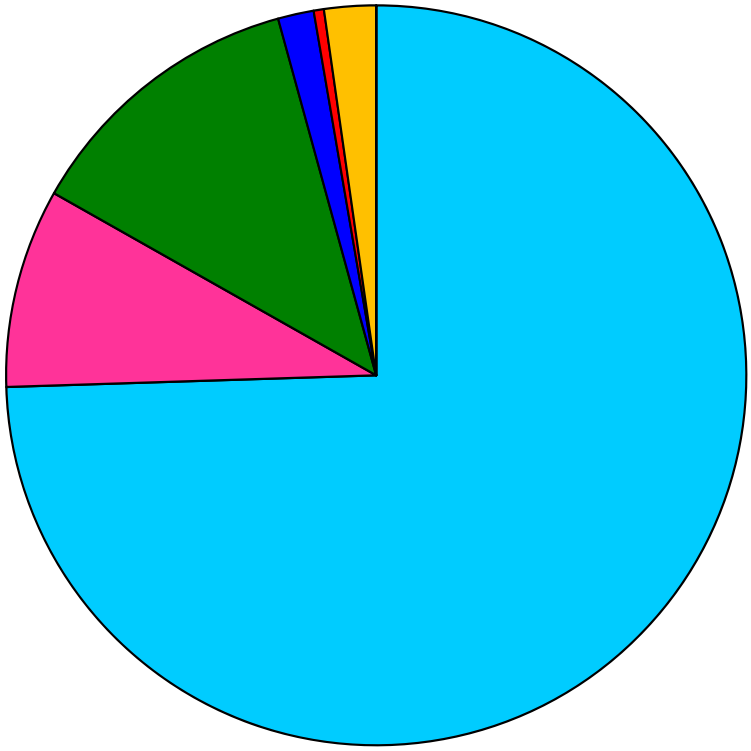
Legend

- Maximum
- 75% quartile
- Median
- 25% quartile
- Minimum
- Outliers
- Mean ± 2 standard errors

Notes

*: Second River Results are used to represent the SWOs. (see Chapter 18 for explanation)

Mass Balance for Total Organic Carbon



Legend

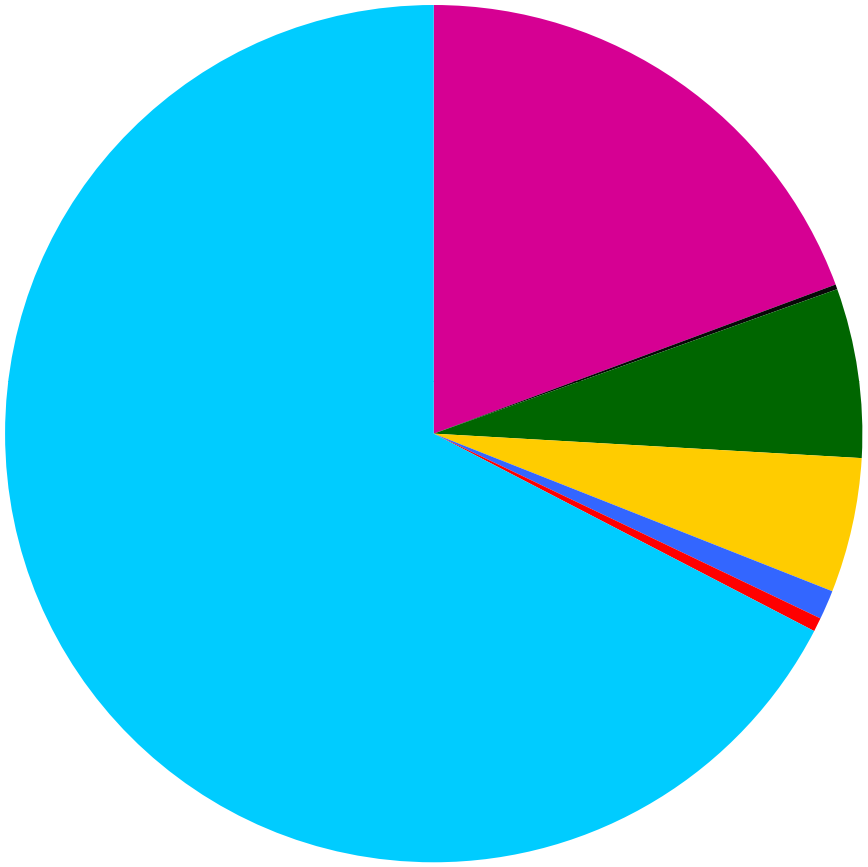
- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

Source Concentration and Mass Balance for Total Organic Carbon

Lower Passaic River Restoration Project

Figure 19-20

September 2008



Legend

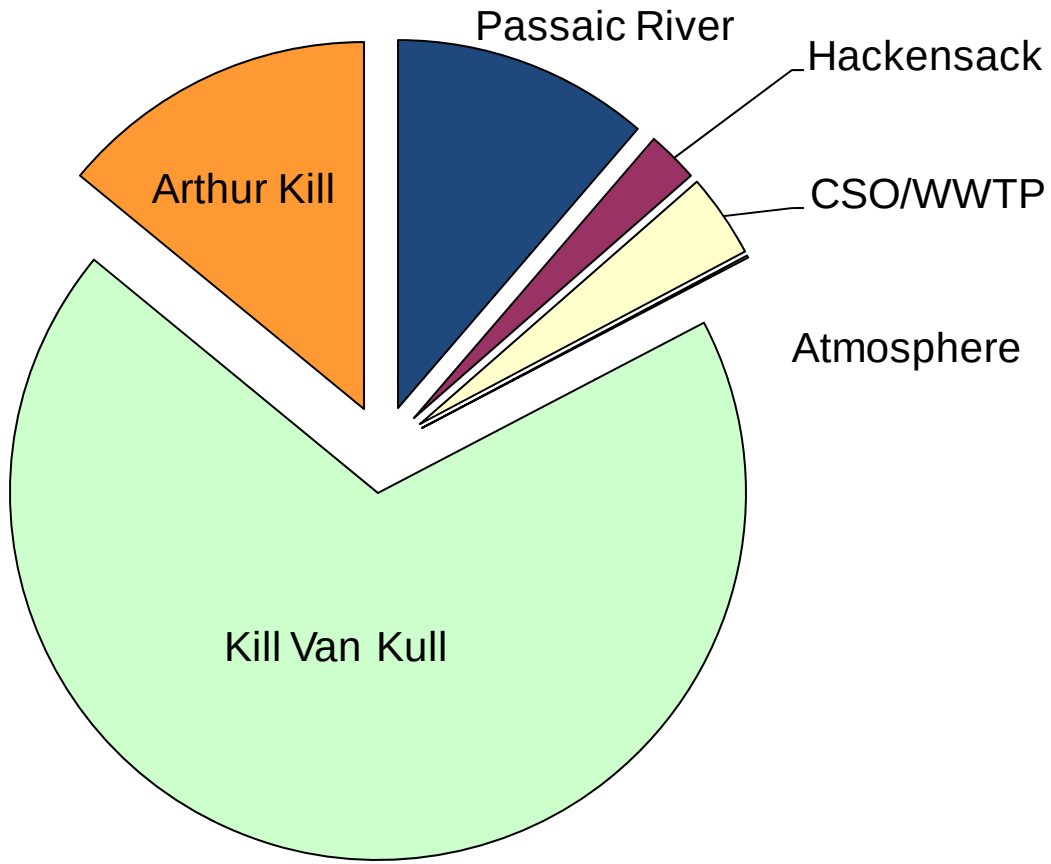
- Upper Passaic River
- Saddle River
- Second River/SWO
- Third River
- CSO
- Newark Bay Northern End
- Resuspension (Lower Passaic River)

Dieldrin Contribution to the Lower Passaic River for Non Iron-Normalized Scenario

Lower Passaic River Restoration Project

Figure 19-21

September 2008

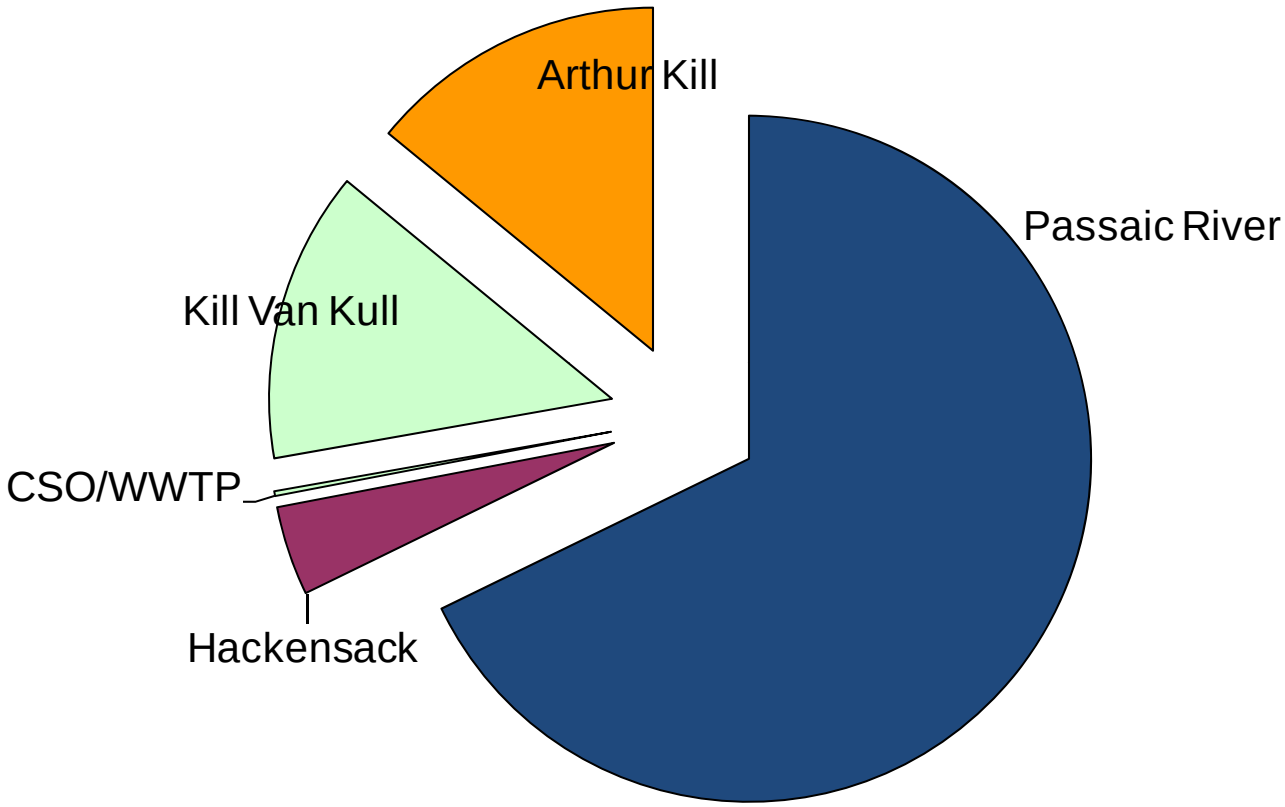


Solids Mass Balance for Newark Bay

Lower Passaic River Restoration Project

Figure 21-1

September 2008

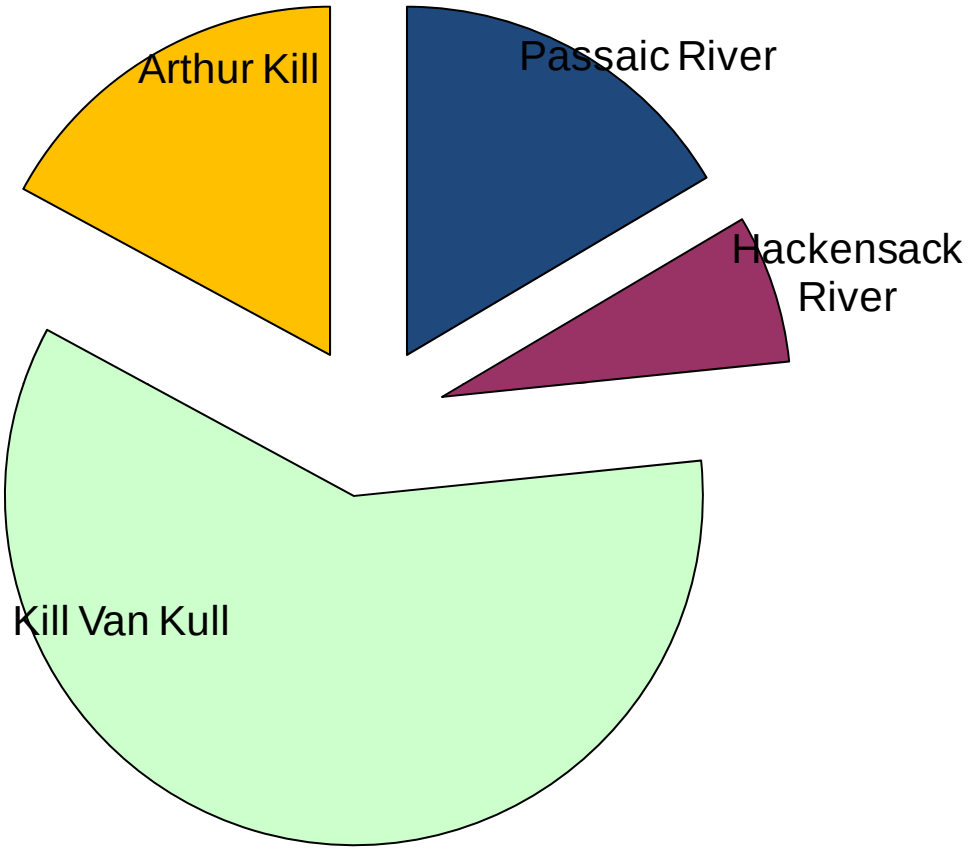


2,3,7,8-TCDD Mass Balance for Newark Bay

Figure 21-2

September 2008

Lower Passaic River Restoration Project

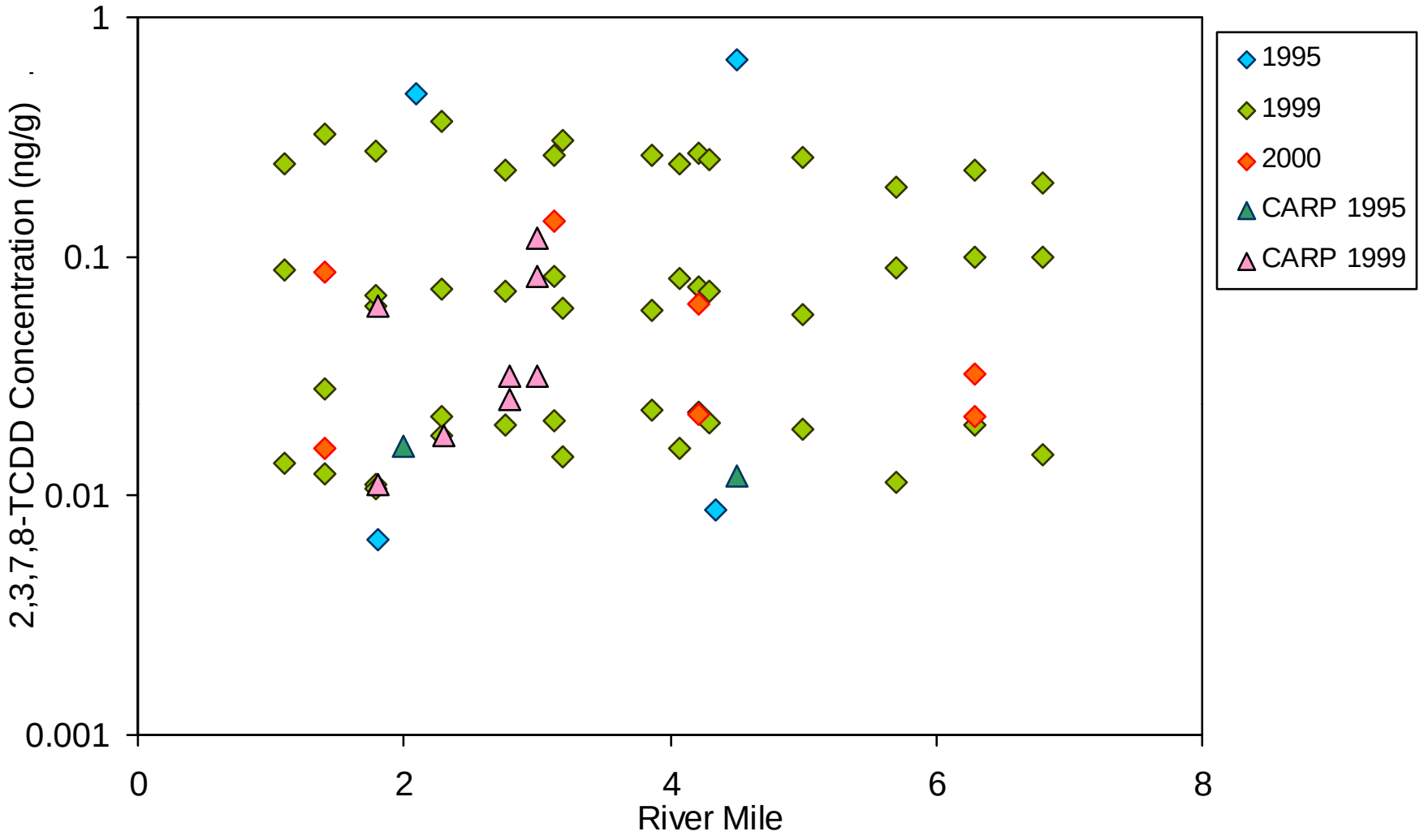


Mercury Mass Balance for Newark Bay

Lower Passaic River Restoration Project

Figure 21-3

September 2008

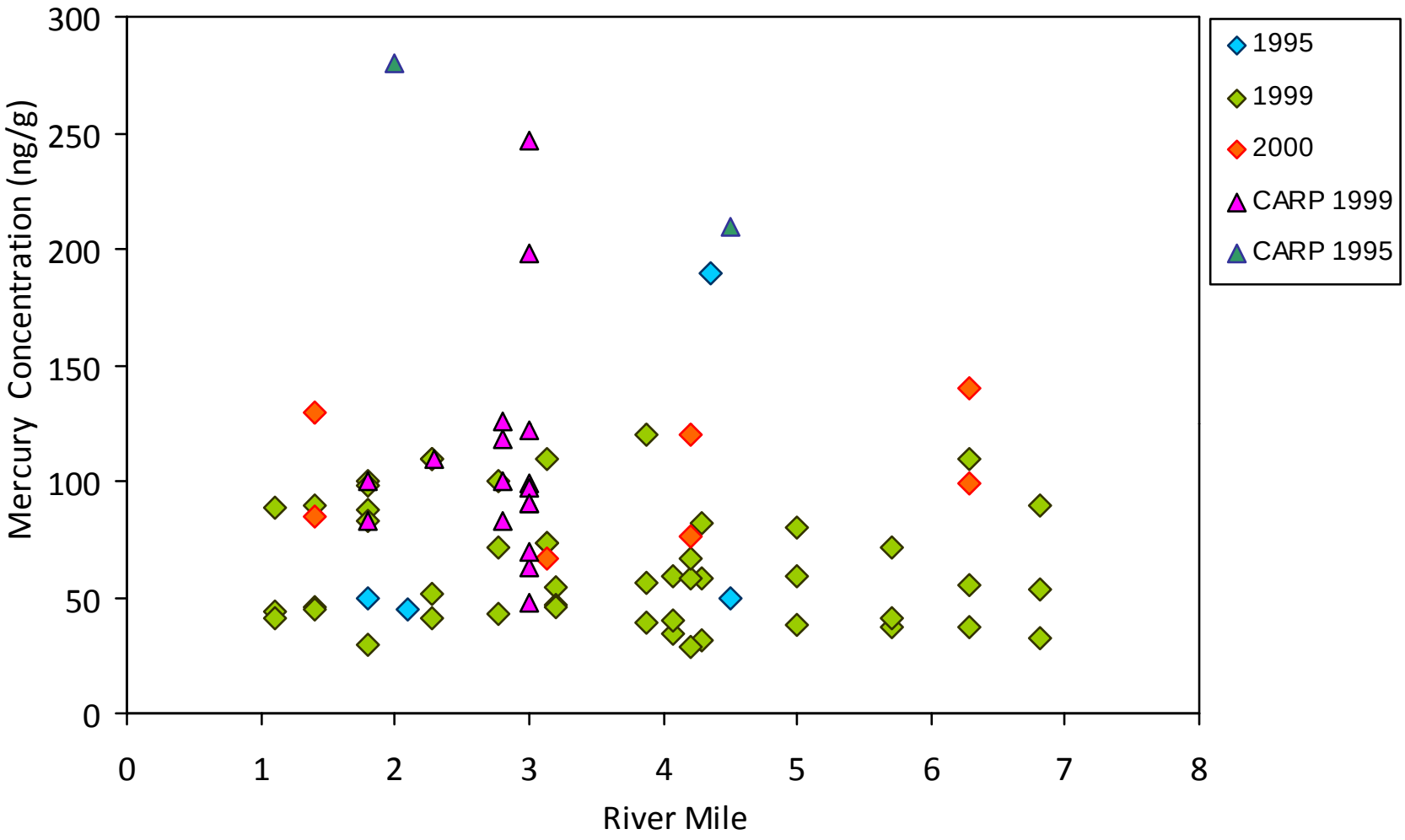


2,3,7,8-TCDD Concentration in Blue Crab Tissue vs. River Mile

Lower Passaic River Restoration Project

Figure 22-1a

September 2008

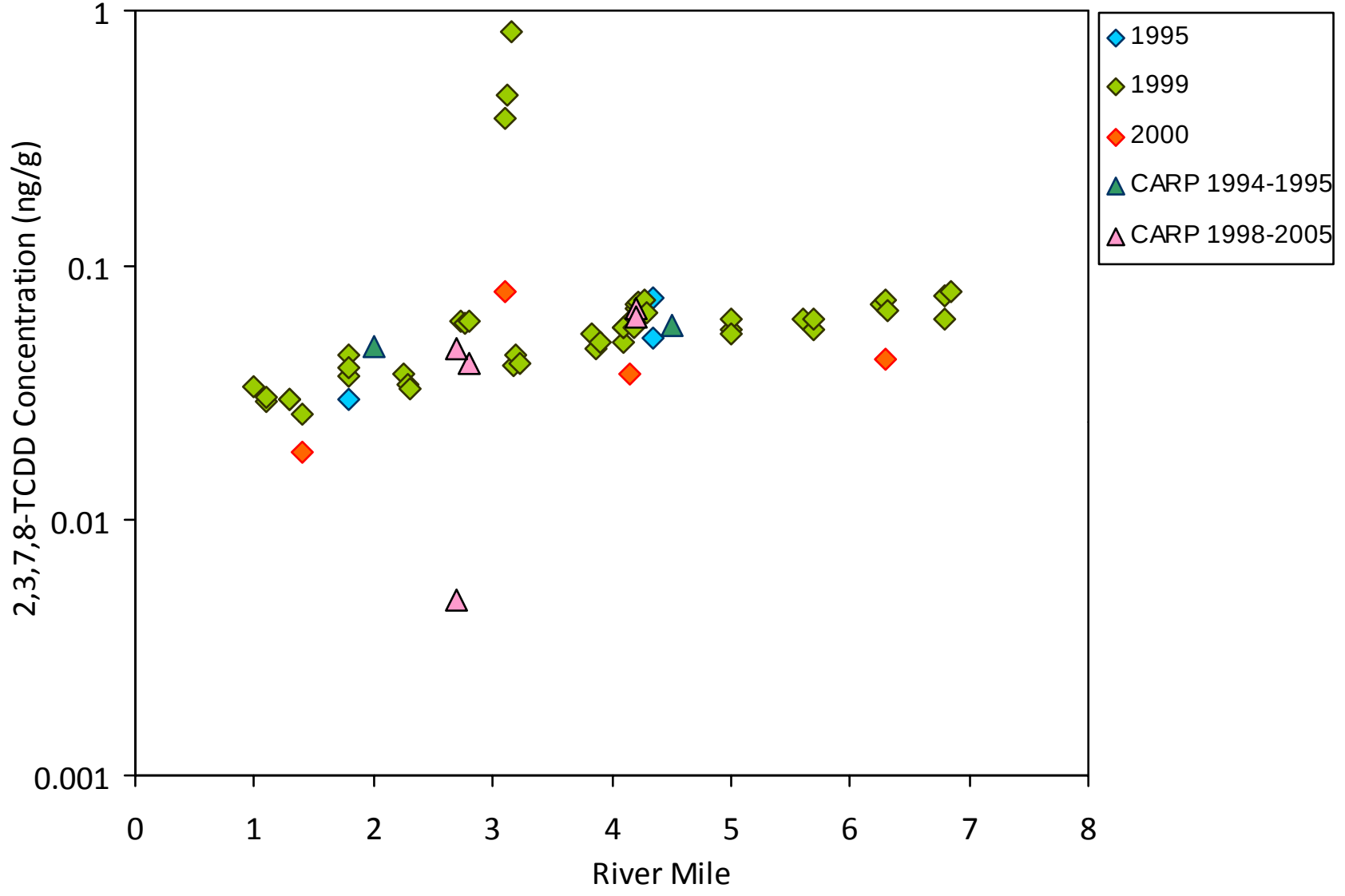


Mercury Concentration in Blue Crab Tissue vs. River Mile

Lower Passaic River Restoration Project

Figure 22-1b

September 2008

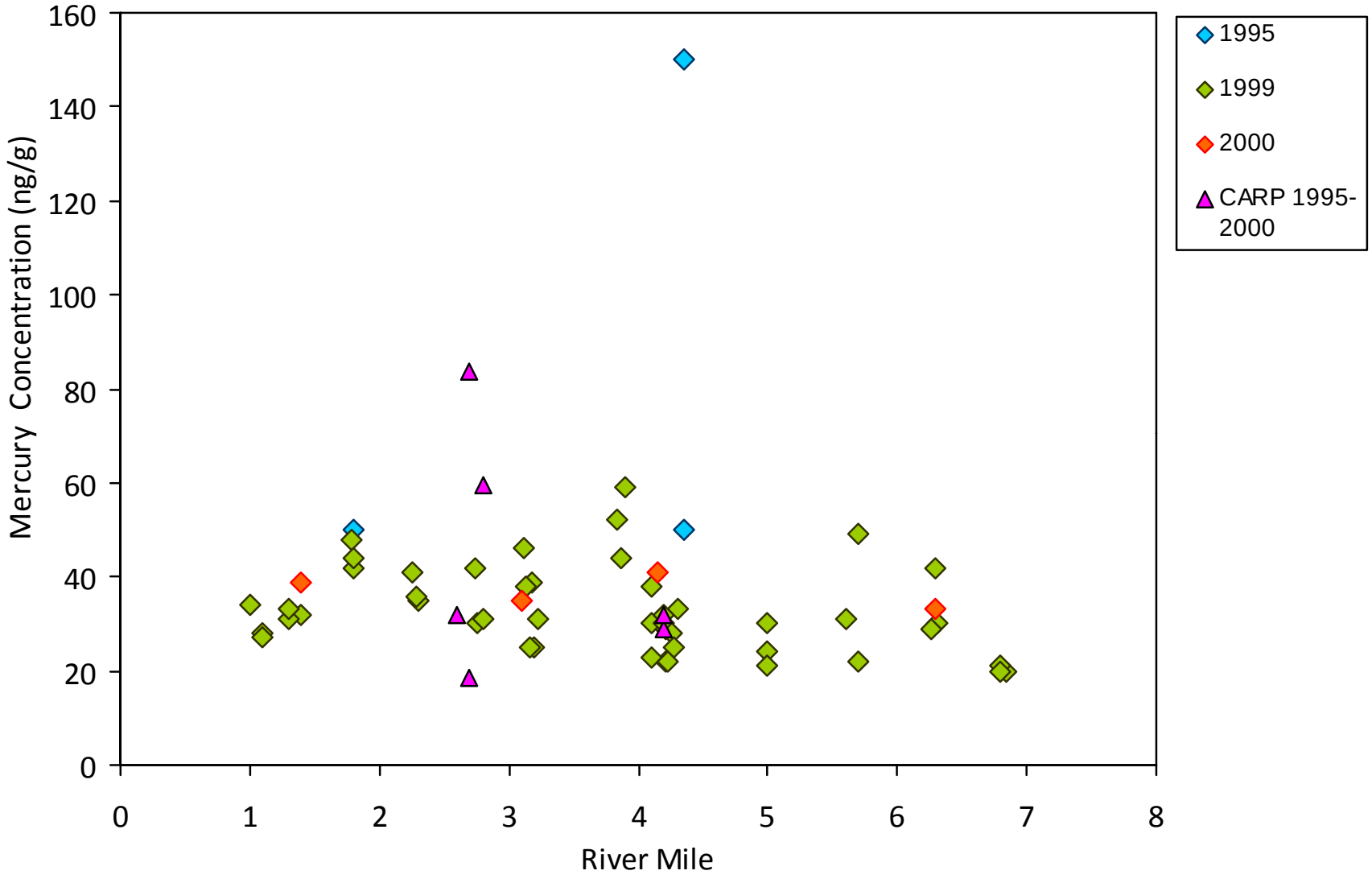


2,3,7,8-TCDD Concentration in Mummichog Tissue vs. River Mile

Lower Passaic River Restoration Project

Figure 22-1c

September 2008

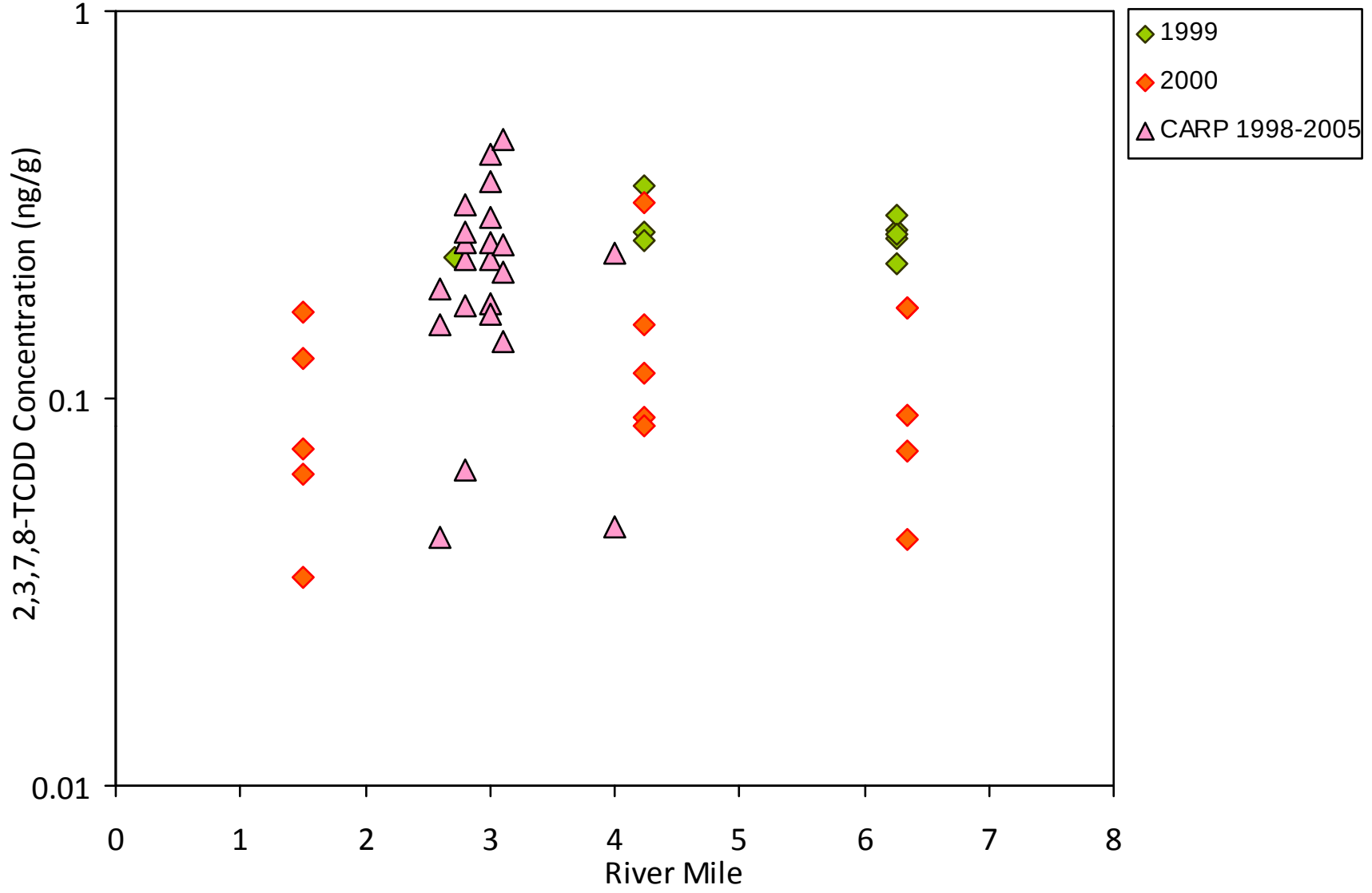


Mercury Concentration in Mummichog Tissue vs. River Mile

Lower Passaic River Restoration Project

Figure 22-1d

September 2008

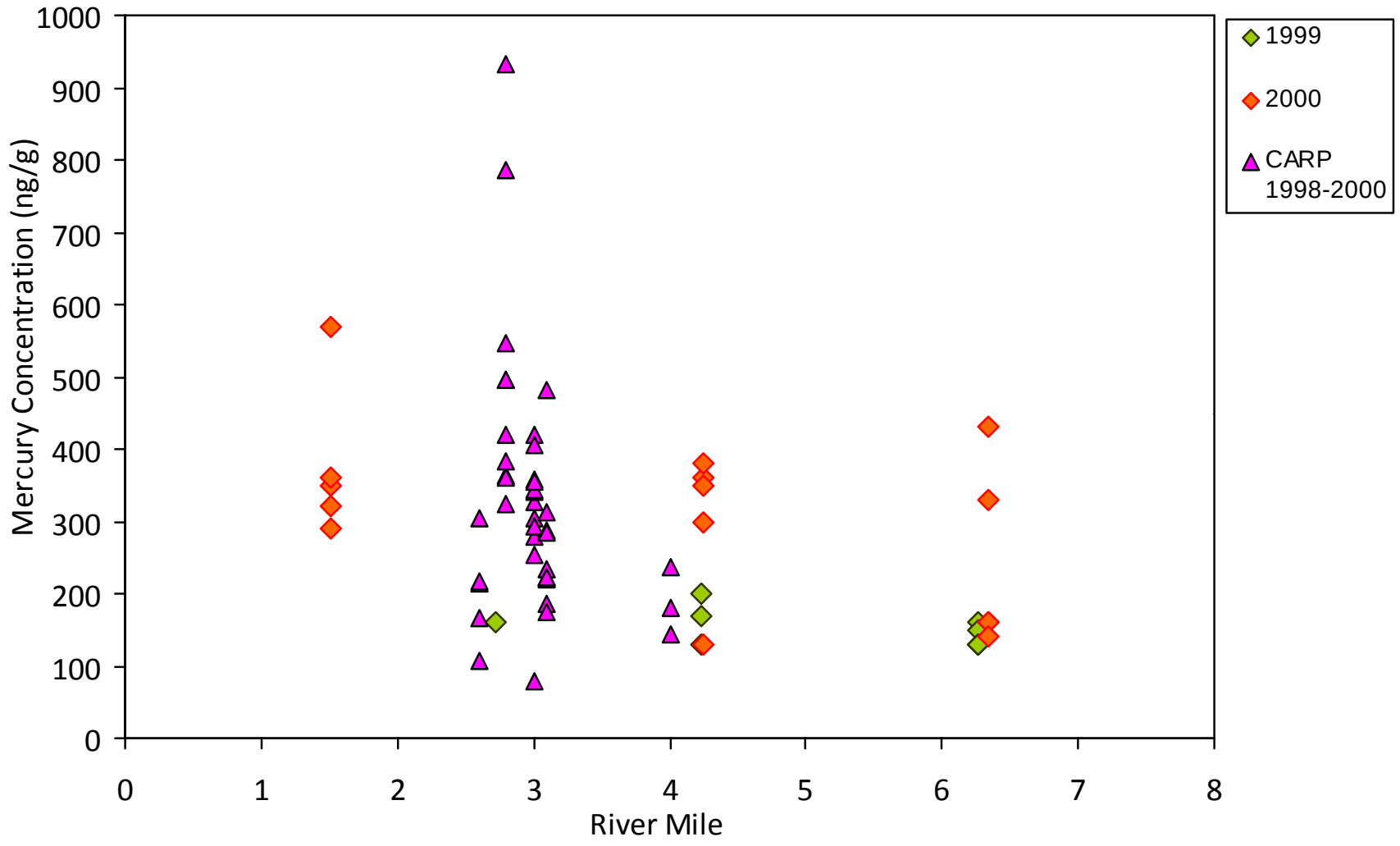


2,3,7,8-TCDD Concentration in White Perch Tissue vs. River Mile

Lower Passaic River Restoration Project

Figure 22-2e

September 2008

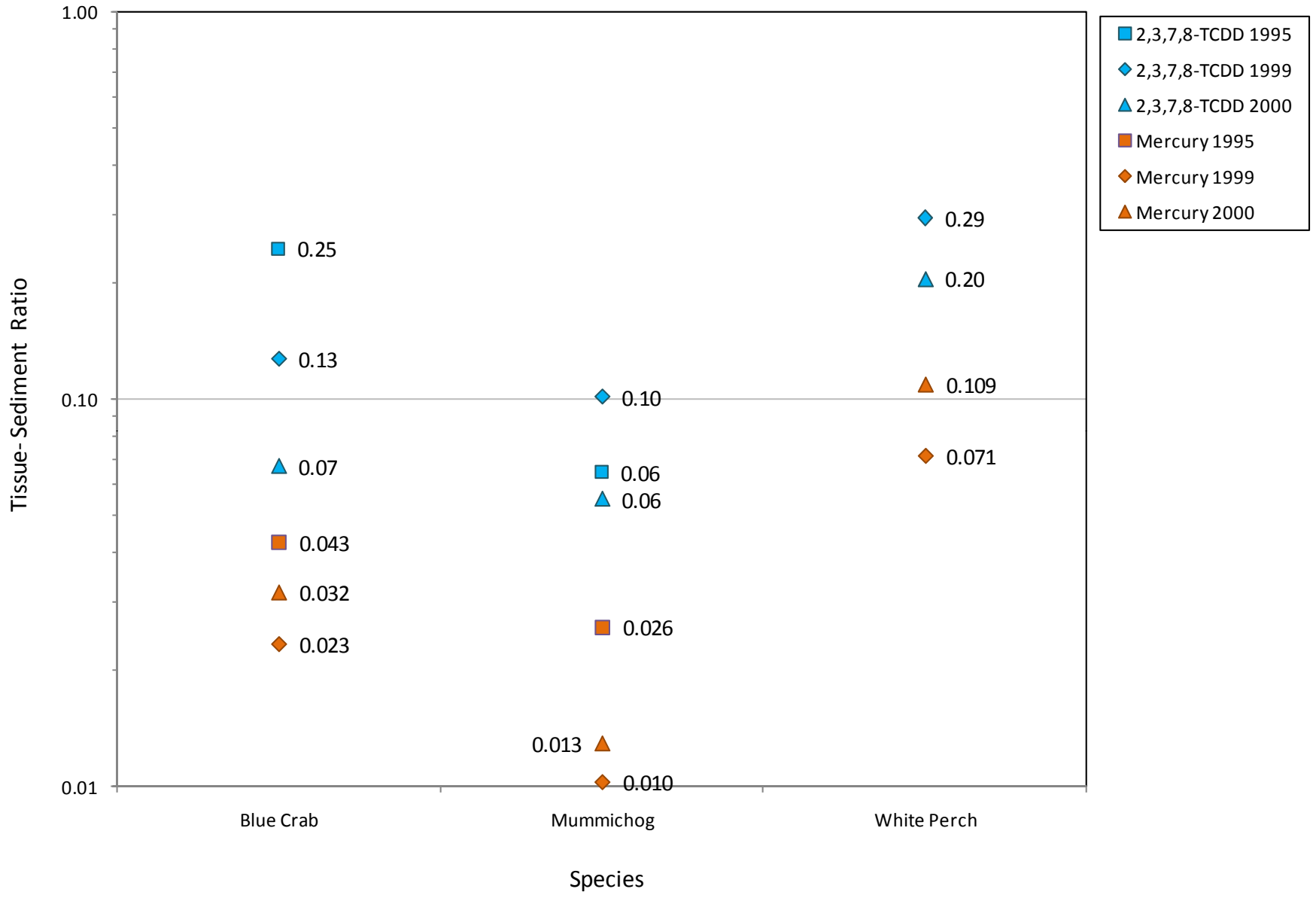


Mercury Concentration in White Perch Tissue vs. River Mile

Lower Passaic River Restoration Project

Figure 22-1f

September 2008

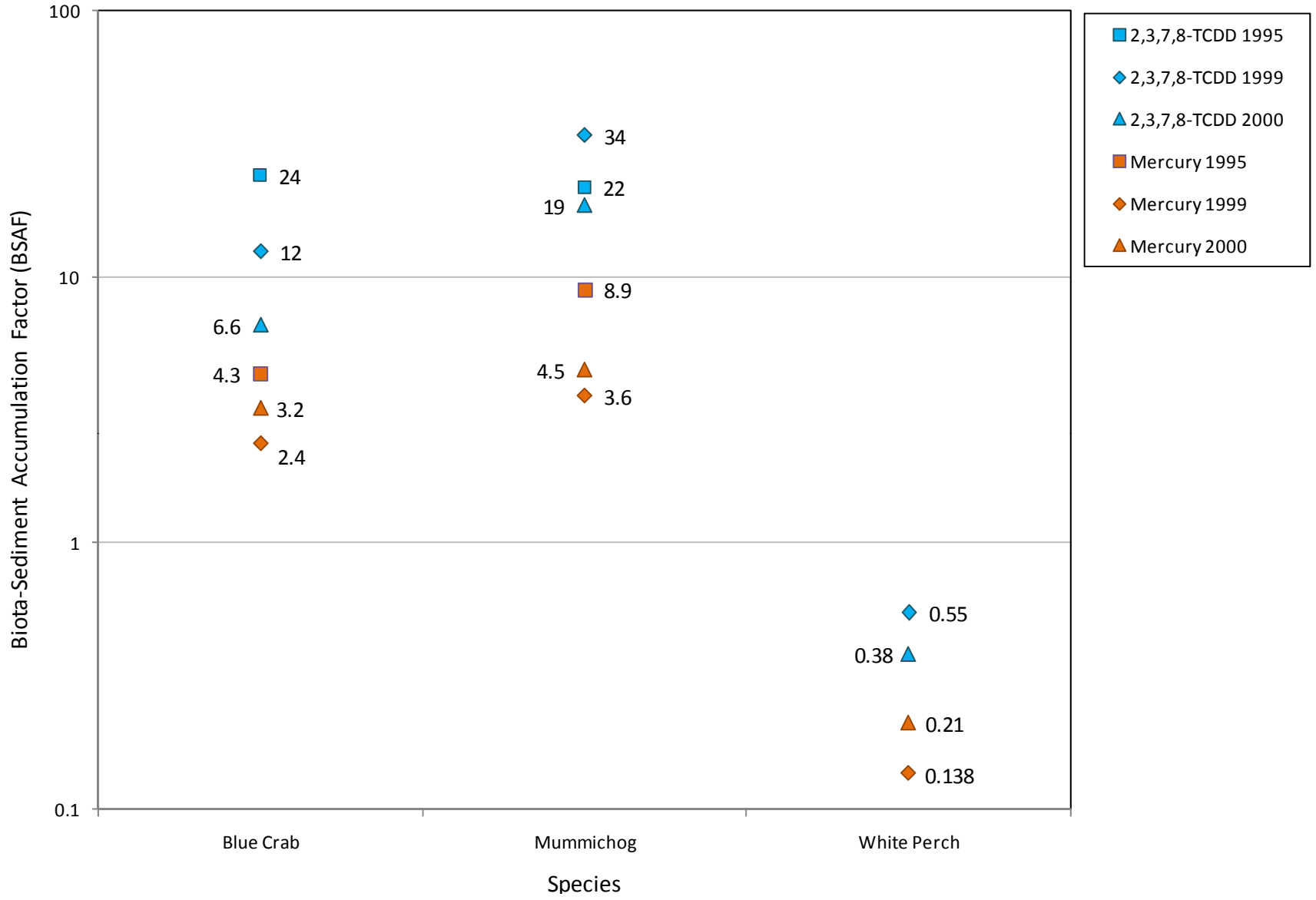


Lower Passaic River Average Tissue-Sediment Ratio values for 3 Species for 2,3,7,8-TCDD and Mercury for the years 1995, 1999 and 2000

Lower Passaic River Restoration Project

Figure 22-2

September 2008



Lower Passaic River Average Biota-Sediment Accumulation Factor (BSAF) values for 3 Species for 2,3,7,8-TCDD and Mercury for the years 1995, 1999 and 2000

Lower Passaic River Restoration Project

Figure 22-3

September 2008